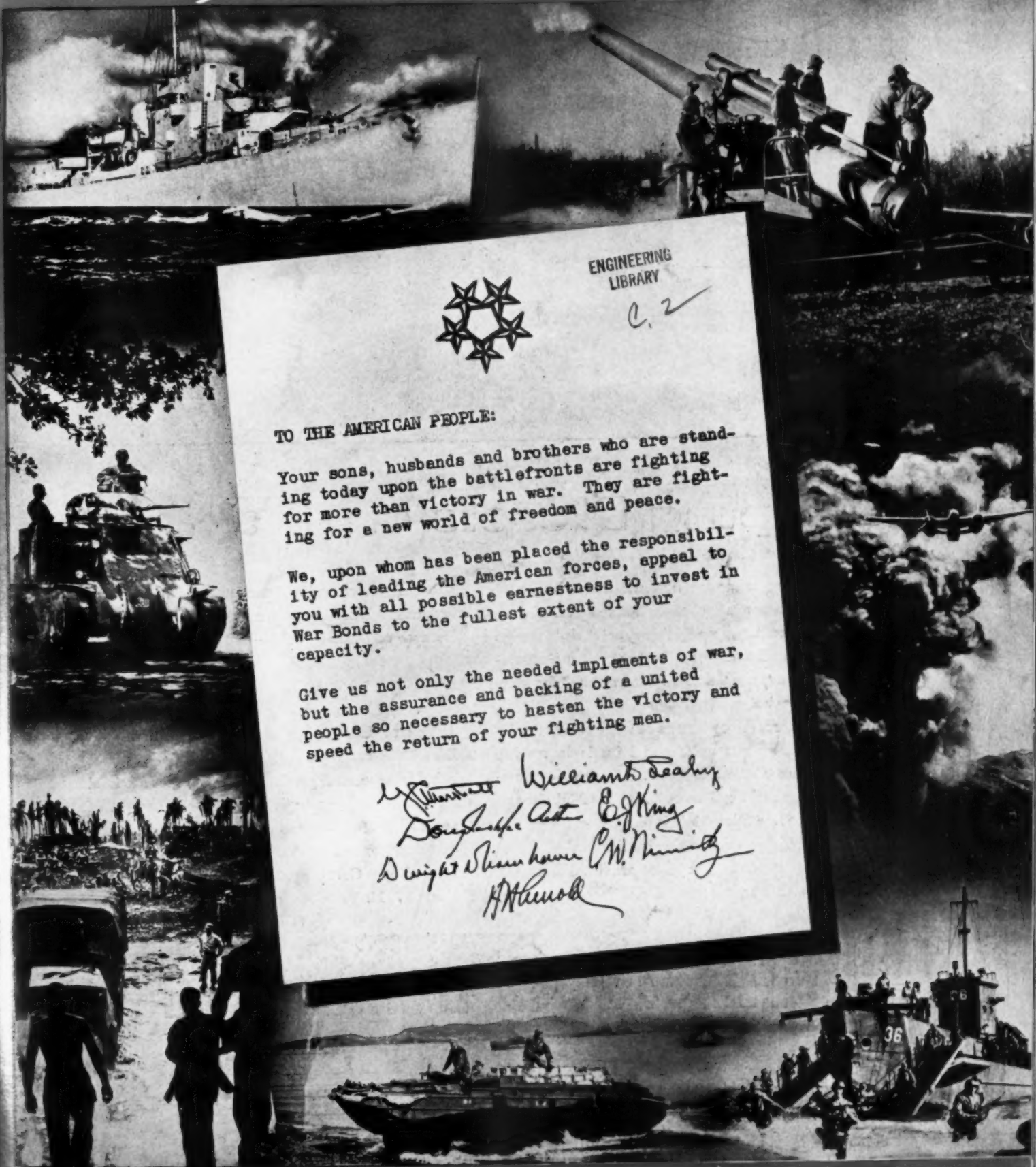


DIESEL PROGRESS

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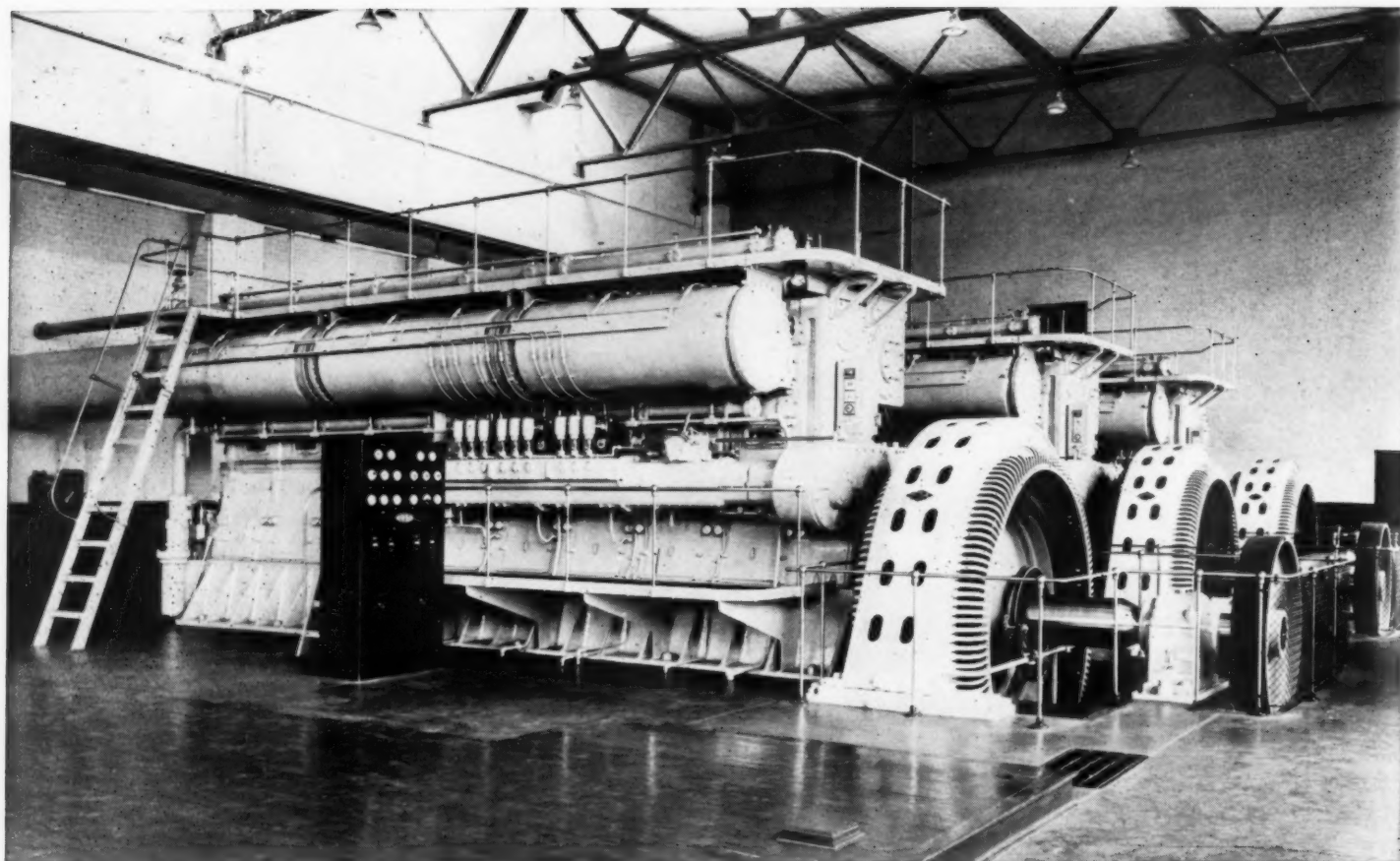
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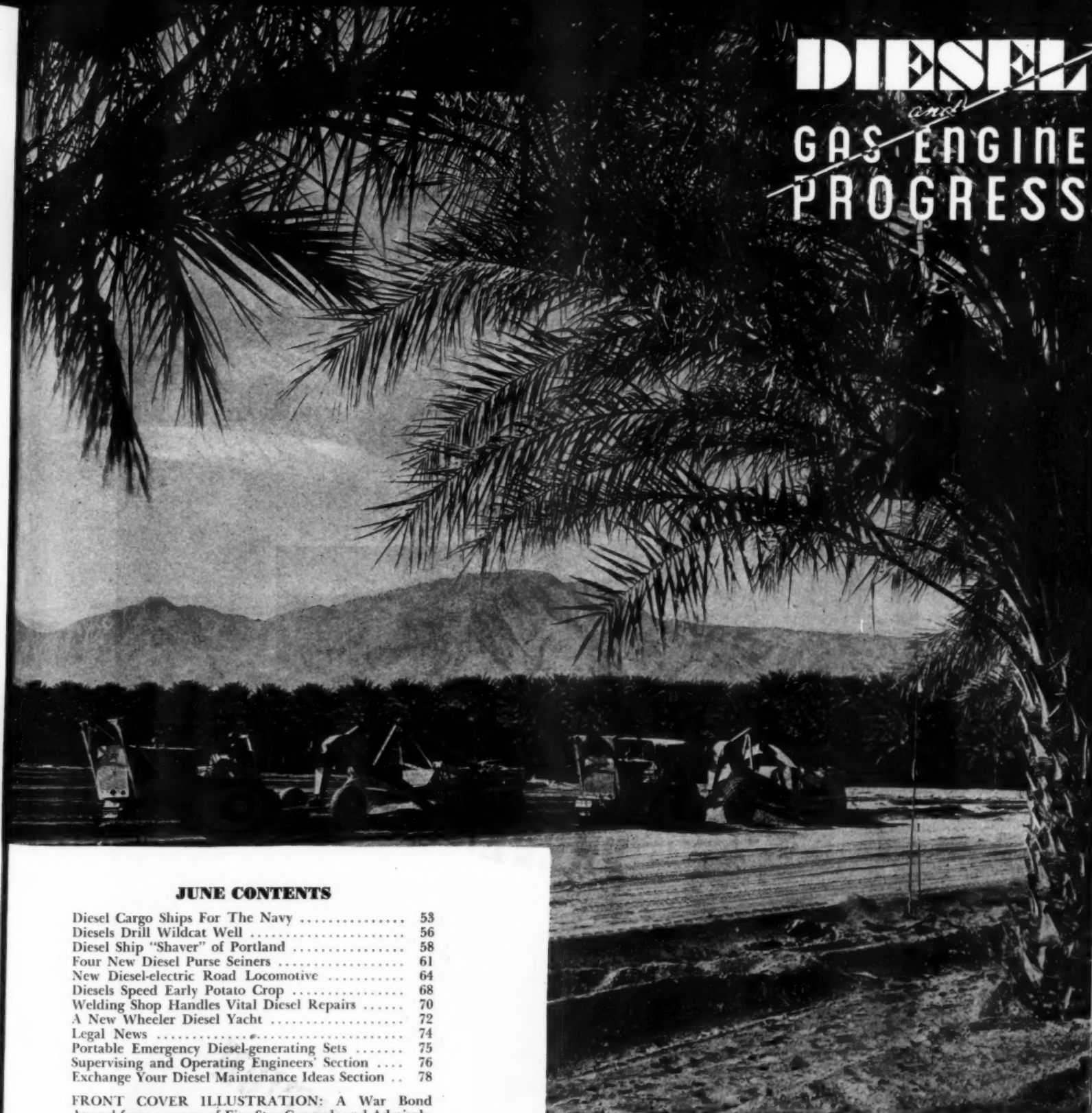
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FOR ALL DIESEL ENGINES

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT—CBS

DIESEL PROGRESS, for June, 1945. Volume XI, Number 6. DIESEL PROGRESS is published monthly by Diesel Engines, Inc., 2 West Forty-fifth St., New York 19, N. Y. Rex W. Wadman, President. Acceptance under the Act of June 5, 1943, at East Stroudsburg, Pa., authorized March 27, 1940. Subscription rates: \$5.00 per year, single copy, 50c.

DIESEL and GAS ENGINE PROGRESS



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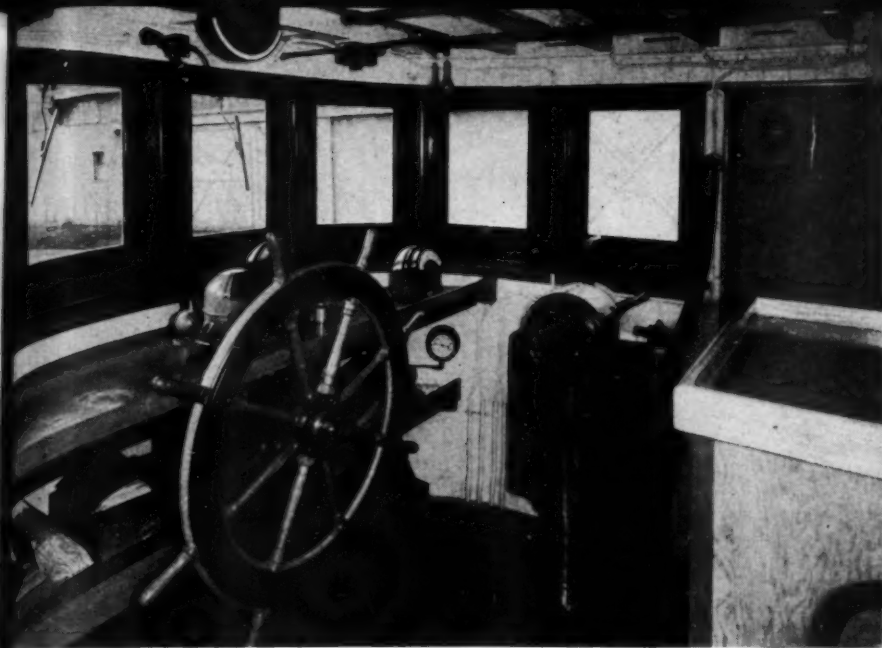
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Pilot house equipment includes Bludworth rudder indicator in front of the wheel, and Weston tachometer, right of wheel.

30 DIESEL REFRIGERATED CARGO SHIPS FOR THE NAVY

By CHARLES F. A. MANN



The "YP 627" "squats" for an aerial view of her decks.

NOW, with our Navy spread out over every part of the mighty Pacific, even the job of supplying fresh fruits, vegetables milk and meats takes on a stature that makes even a large peacetime commercial shipping problem pale into relative insignificance.

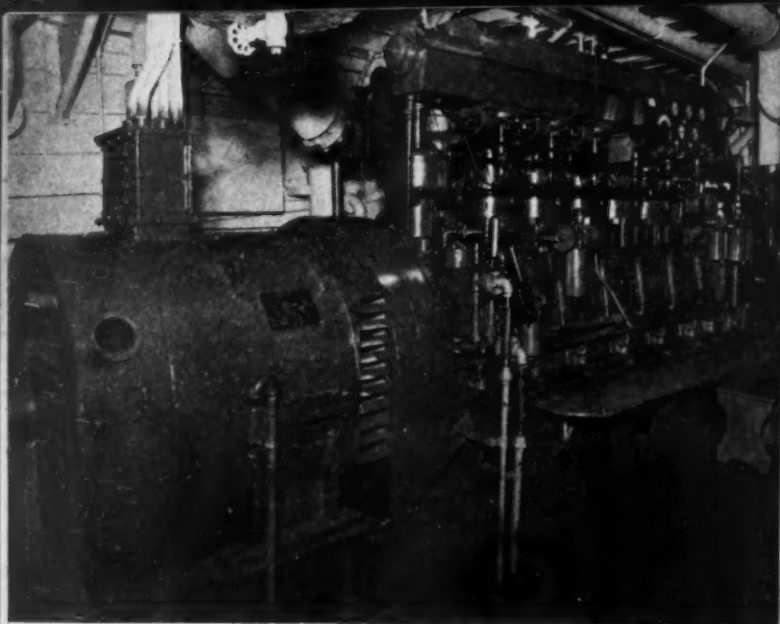
To keep pace with the growing magnitude of operations in the Pacific, the Navy has under construction a fleet of 40 remarkable little refrigerated cargo ships. Several things are positively remarkable about these husky little wood and Diesel vessels, and we think that after the war, the sagacious officers of the Navy Bureau of Ships who conceived the idea will be quite famous in their own right for not only the product they turned out, but the fact that

of all the innumerable expenditures the Navy has had to make in plant and facilities, afloat and ashore, the YP refrigerated cargo ships stand out clearly as just about the thriftiest, most sensible use ever made by any Naval Appropriation for marine equipment in World War II.

Harbor Boatbuilding Company at Los Angeles designed this fleet of 30 ships. Eighteen are building on Puget Sound and the North Pacific Coast; 3 yards in Tacoma; 1 in Bellingham; 1 in Astoria; 2 in Seattle; 1 in Aberdeen and 1 in Everett, Washington. Fourteen are being turned out by California boatyards. All are as alike as the proverbial 2 peas, as to design, layout and machinery.

What the Navy did was to decide that for a practical, handy 250-300 ton refrigerated cargo ship, suitable to run everywhere and in any climate, and to get them built in a hurry with minimum of high priority or scarce materials, was to adapt the Pacific Coast tuna clipper lock stock and barrel and turn the job over to the gang of Coast builders long familiar with working up wood and Diesel into beautiful boats that will stand the gaff, with instructions blanketed to merely say: "Best Commercial Tuna Vessel Practice."

The Navy's wise choice of this design has boosted the morale of Coast fishermen and boat-builders in many ways, for ever since last Summer the very high capacity of Coast boatyards



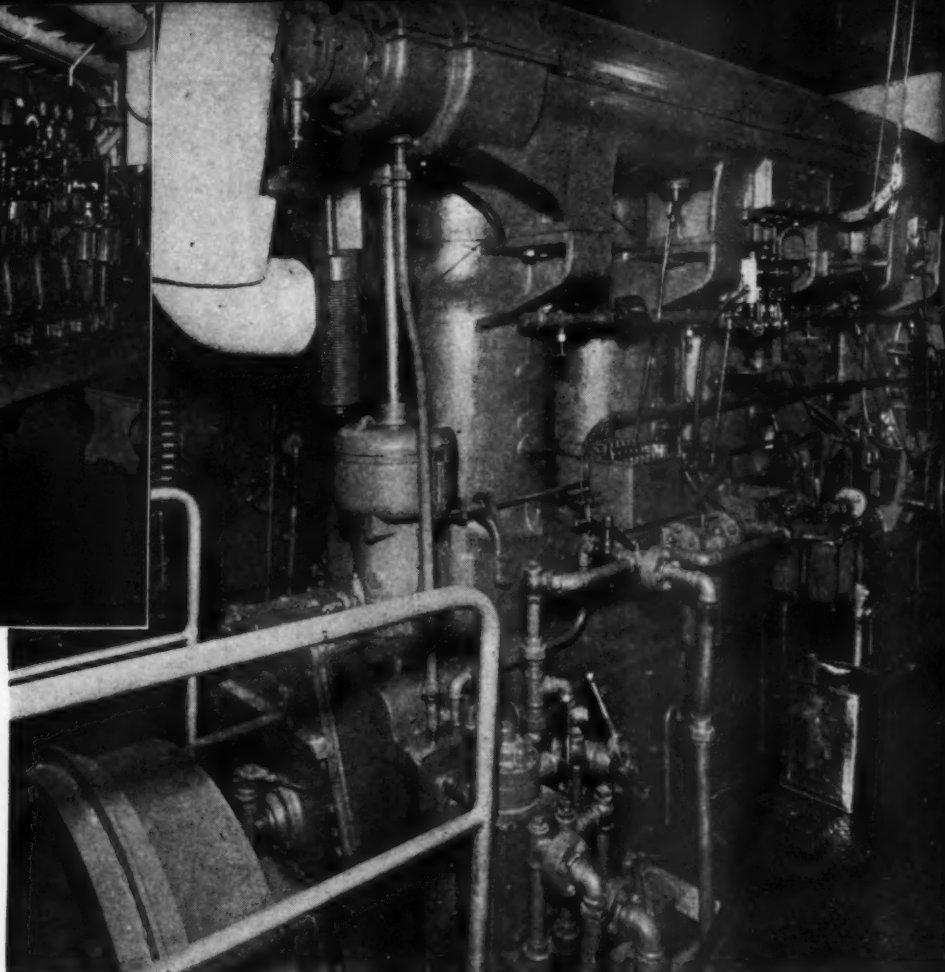
One of two 125 kw. auxiliary generating units powered with Union, 6 cylinder Diesels.

to turn out wood and Diesel boats to help win the war has been used less and less with each passing month, while the armed forces still had plenty of room for boats that these busy yards could turn out at a tremendous rate. And manpower is ever ready to operate them without elaborate months of special training. Simple to operate; long cruising radius; easy to handle in all kinds of harbors and in all kinds of weather; simple to repair in case of accident or damage (you just go ashore, saw up a tree, nail the plank over the ribs and keep going)—this type represents the end-product of a long, gradual evolution of the Pacific Coast tuna clipper.

The YP 627 and her sister, the YP 628 are products of Tacoma's famed Western Boat Building Company, owned by Father Martin Petrich and his 5 sons, builders of over 200 leading Coast fishing vessels, all wood and Diesel, every one of them.

The YP 627 has overall dimensions of 128 x 29 x 15.9 depth and 12.9 draft. Besides a splendid power plant and capacious refrigeration plant, the ship is equipped with the usual assortment of special Navy items of equipment. These items, largely armament and navigational equipment, are naturally of no concern to our readers during a war.

Construction is of heavy Douglas fir, ribs, keel, planking and deckhouse structure. The conventional tuna clipper arrangement below is followed throughout, with all living space for the crew of 3 officers and 22 men located above the main deck where there is plenty of fresh air and sunshine. Tank and engine room space



The main propulsion unit is this 560 hp., 6-cylinder Union Diesel. Note Manzel lubricator, center.

is located far forward, leaving the after end of the lower hull free for the conventional refrigerated space. In the case of the YP 627 all the fish tank space is merely refrigerated cargo space, with the usual procedure of lining the forward group of tanks lying each side of the shaft alley with steel sheets to permit outward cargo of additional fuel oil, then to be cleaned and filled with refrigerated fish for the return voyage. The two-compartment bait tank space on the after part of the main deck is again a modified, roomy cargo space right on the main deck—a novel idea for these floating foodstores of the Navy, and very easy to load and unload.

Next is the roomy engine room with its 560 hp. Union Diesel engine for main propulsion, flanked by two identical 125 kw. Union Diesel auxiliary generating sets for carrying the large electric load for deck machinery, lights and refrigeration. The main Union Diesel is a six cylinder, heavy duty model, with 14 x 19 in. bore and stroke; direct reversible. It is fresh water cooled, having both fresh and salt water circulating pumps hooked directly to the engine, working through a Harrison heat exchanger, regulated by a Fulton-Sylphon automatic thermostat to maintain constant engine

temperature. Top speed is 325 rpm., and driving through a Kingsbury thrust bearing, via a 65 ft. tailshaft, the main Diesel swings a 3 bladed Manganese Bronze Coolidge propeller, of 76½ in. diameter. Micarta stern bearing liners are fitted, as well as Micarta lining for the stuffing box. A built-up steel rudder made by Western Boatbuilding Co. is fitted, powered by a Montgomery Elevator Co. electro-mechanical steering gear, with full follow up control.

Harrison lube oil cooler; Michiana lube oil filter; a Cuno edge-type oil filter; Manzel lubricator and 2 Tuthill lube oil pumps are fitted in connection with the main Diesel. Both main and the two Union auxiliaries exhaust through Maxim silencers.

A unique feature of the machinery is the use of the identical twin generating sets, one of which is used all the time, and two cut into the electric circuit when load, temperature or deck machinery usage of power necessitates. Each is a 6 cylinder Union generating set, comprising the Diesels, each with 3½ x 11 inch bore and stroke directly coupled to Allis Chalmers generators rated at 125 kw. at 125 volts D.C., at 550 rpm. Each auxiliary Diesel set has a single

cylinder 4 x 4 inch single stage air compressor coupled to the main shaft, charging two large air bottles slung to the ceiling of the engine room, forward. Another unique feature of the auxiliary power is a tiny little 4 hp. single cylinder vertical Witte Diesel, driving an Ingersoll-Rand two stage air compressor, having cylinders $1\frac{1}{2}$ and $2\frac{3}{4}$ inches bore and 3 inches stroke for each. Brown pyrometers are fitted on all three Union Diesels as well as Weston tachometers. Main refrigeration units are twin Frick pumps with 6 x 6 inch cylinders, powered with Fairbanks Morse motors, driving through multiple V belt drives.

Immediately aft of the engine compartment, with its quantity of equipment, is the long shaft alley which serves as accessway to the refrigerated cargo space. Starboard, just aft of the engine room, are two large steel lined combination holds and tanks, with entrance doors at the side (oil tight) as well as flush hatches on the deck above. Next follows three large refrigerated cargo holds. On the port side, part of the steel tank space forward is ammonia and special storage; followed by the matching set of 3 large refrigerated cargo holds. Each of the

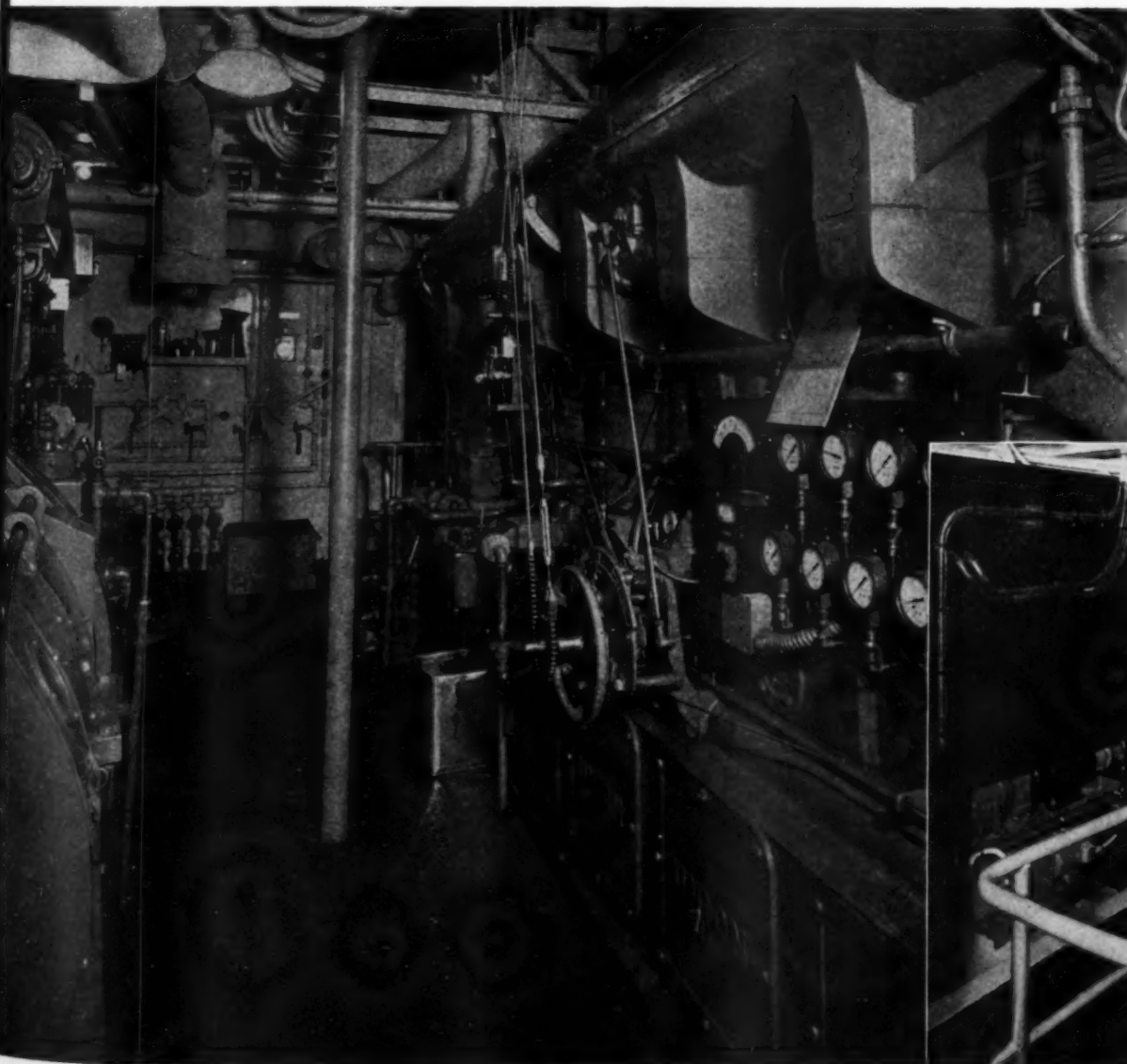
six main cargo holds forms its own water tight bulkhead, both transversely and longitudinally, which, together with the enclosed shaft alley, forms a fully compartmented ship capable of floating even though half her hull has been punctured. In the extreme aft are four fresh water tanks with combined capacity of 7600 gallons.

The main deck, forward, comprises a roomy space for workshop, bosun's stores; lube oil tanks and the steering motor drive. Next is the upper engine room area, with a Sullivan oil fired heating boiler, with York oil burner; the twin ships cold storage rooms and main electric control panel. Next comes the galley and messroom, with its Hughes oil range, Corley Hayes electric water cooler, electric coffee urn and roomy McCall icebox. The shelter deck enclosure extends clear back to the refrigerated cargo spaces formed out of what is normally the bait boxes. All the cargo holds are accessible from the main deck through raised or flush hatches. The ship carries a Johnson Foundry Company's anchor winch and cargo winch, with Cutler Hammer controls. Two large cargo booms are fitted. The anchor hoist and the

cargo hoists are carried on the raised deck.

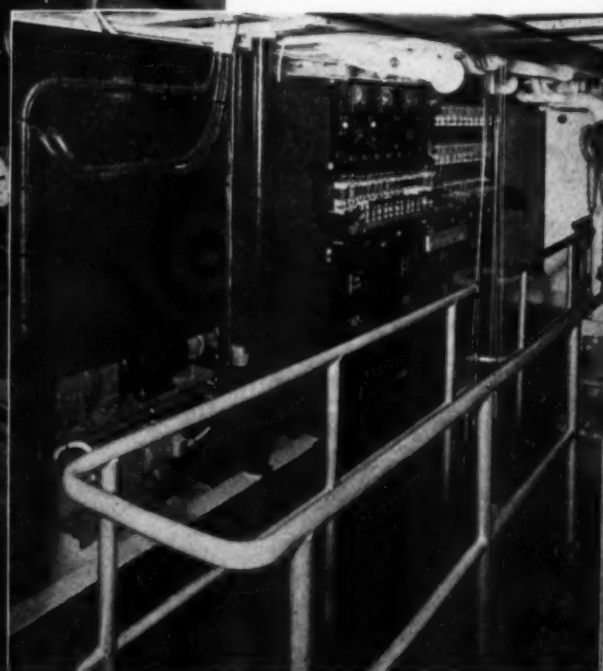
In the deckhouse on the raised deck are roomy crew's quarters forward, with ample locker space. Next is another crew's quarter space, followed by captain's stateroom on one side and CPO quarters on the other, with large skiff carried on one side, aft, with access hatches to the two main deck cargo spaces in the baitbox location.

Every part of the spaces where men live or work is fully air conditioned with pressure exhaust and inlet fans. Radiation is of the enclosed convector type, using hot water instead of steam. The roomy pilot house and chart room is of conventional design, with plenty of visibility all round, and occupies a small area on top of the raised deck area. Portable fire extinguishers; plenty of lighting outlets; easy and innumerable stairways up and down; roomy locker and storage space and all kinds of little extra features found only on the de luxe type of tuna clippers characterize the YP 627 as a comfortable, practical and very useful ship type of our Navy. 'Three' cheers for the Navy for letting the tuna clipper design into their fleet!



View between main and starboard auxiliary Diesels. Note Weston tachometer and Wheelco pyrometer on gage board.

The main switchboard is of Ets-Hokin & Galvan manufacture.



DIESELS

DRILL WILDCAT WELL

By JIM MEDFORD

IN Padre Canyon, Ventura county, California, some of the first heavy duty Diesel engines in this area are being used by O. L. Riley for oil well drilling. An Ideal Consolidated rig is powered with two six-cylinder Superior 8½ by 10½ Diesels operating the draw works and a 7¾ by 16 mud pump. A second mud pump, 7¾ by 18, is driven by a third Superior Diesel, eight-cylinder 8½ by 10½, using multiple V-belt drive.

The six-cylinder Diesels are rated 280 hp. at 800 rpm., the eight-cylinder Diesel 375 hp. at 800 rpm. Engine cooling water is circulated through radiators, one to an engine, by built-in engine pump and radiator air circulating fans are driven by V-belts from engine shaft.

Portability was emphasized when the equipment was moved into the present site. Because the draw works can be dismantled into sections and the engines and pumps are mounted on skids, the outfit offered no particular transportation problems even over the steep Padre Canyon grades. It was moved in and set up within sixteen hours.

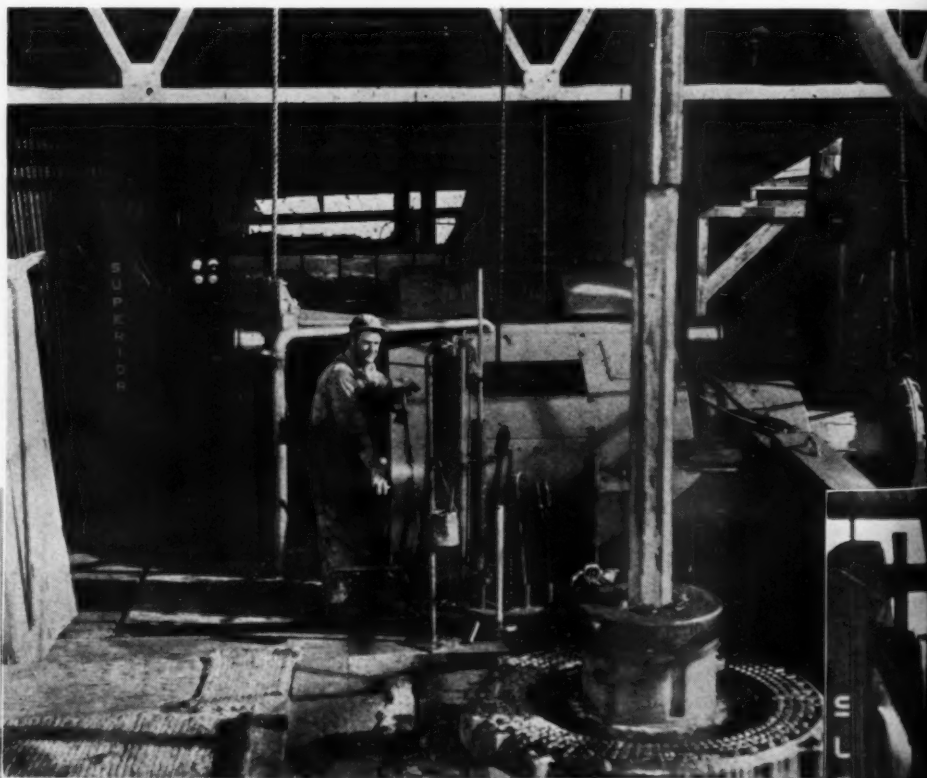
Started shortly after the first of the year, Hobson A-15 was spudded in and it is intended to drill to the 8000-ft. zone. At 600 feet a 11¾ surface string was set. Balance of hole is 10¾ drilled with 4½-in. drill pipe all the way. Casing will be run to bottom and gun-perforated.

Diesel engines have been extremely flexible in oil field service, particularly for drilling, and skilled engineers are not necessary for their

satisfactory operation. The engines on this job have been carefully selected for their conservative rating thus permitting fairly large overloads in emergencies of short duration. Also this reserve is put to good purpose when starting out of hole with long drill string.

Each engine is mounted on a separate skid frame together with shaft extension, the latter supported on self-aligning roller bearings. Engine frames are adjustable mounted crosswise on the main sub base. For mud pump V-belt clearance, the rear engine frame is notched. Power is transmitted from the engines to the master clutch shaft on the draw works by 1½-in. triple roller chain. For compounding and mud pump drives, multiple V-belts are used throughout. The engines are compounded for hoisting operations, driving the rotary machine and the slush pump while drilling.

Incorporated in the draw works, the transmis-



View of the drill rig deck with drill works, foreground and two Superior Diesels, background. Drive is Diamond chain.



General view of the rig, showing drill stem coming out of rat hole. Radiator of the 375 hp. Superior Diesel seen right rear.

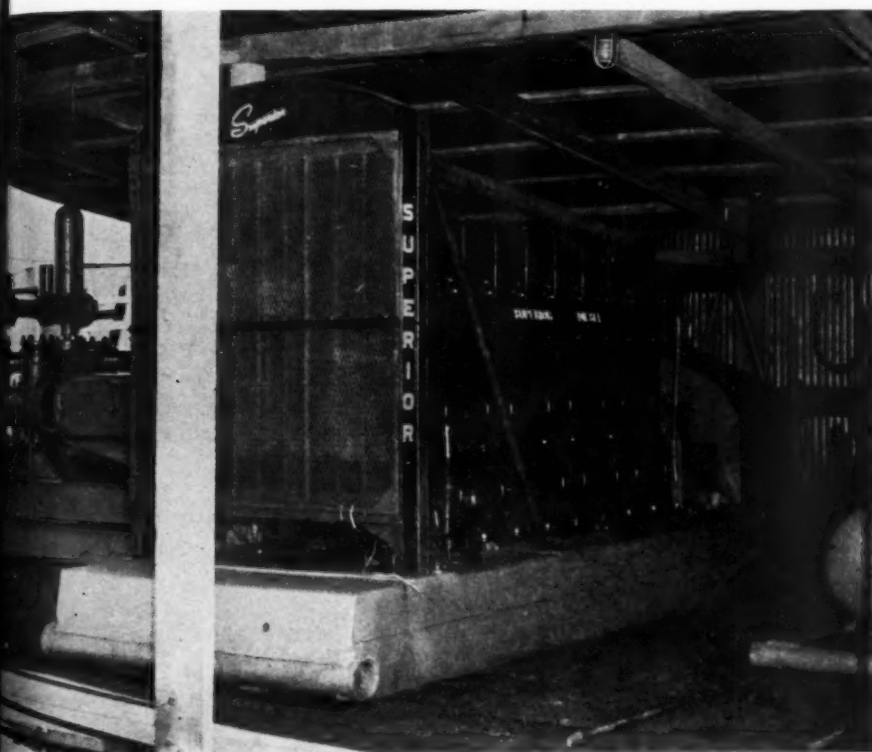
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sion utilizes double strand chain of 2-in. pitch giving six hoisting speeds. Reverse speed is accomplished with constant mesh helical gears.

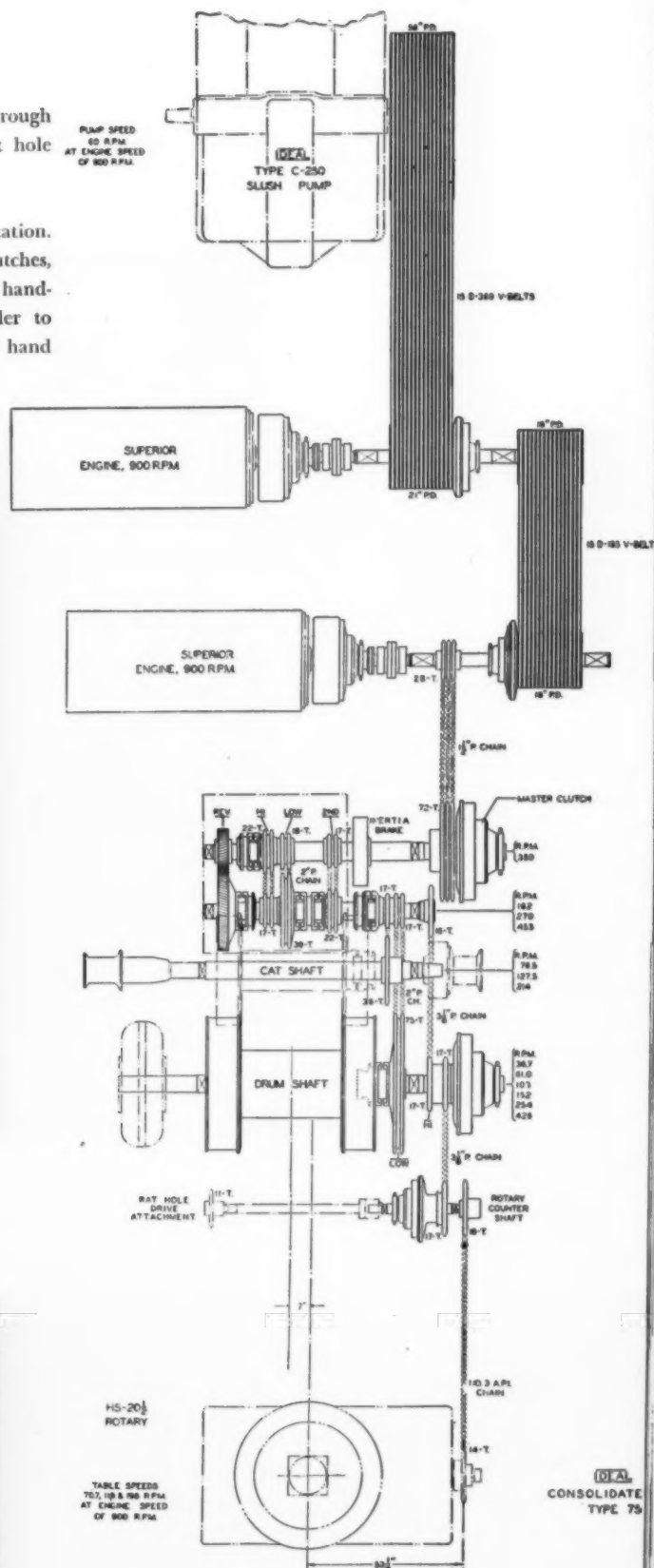
Jaw clutches are used to make the speed selections. An inertia brake on the master clutch shaft outside the transmission housing permits the shifting of the transmission clutches and also brakes the catheads. Chain is used in transmission drives throughout the draw works and for

turning the high speed rotary table through rotary counter shaft that carries the rat hole drive attachment.

Controls are centered at the driller's station. These include the master clutch, drum clutches, engine throttles and brake lever. A dual hand-wheel throttle control enables the driller to control speed of both engines. A single hand lever shifts the transmission clutches.



The third Superior Diesel, seen here, drives a Gardner-Denver mud pump through Gates V-belt drive.



Hookup of the two Superior Diesels showing V-belt drive to slush pump and Diamond Chain drive to drill rig.

Close-up of the two drilling engines. Note Alnor pyrometer on gauge board. The radiators are Perfex.

"S H A V E R"

Shaver Transportation Company of Portland, Oregon, officials, left to right: Capt. Leonard Shaver, Vice President and Dispatcher; Capt. Homer Shaver, General Manager; Capt. George M. Shaver, Secretary-Treasurer; Capt. Delmar Shaver, General Manager.



OF PORTLAND

Turns in Low Maintenance Costs

By WILL H. FULLERTON

THE Shaver Transportation Company of Portland, Oregon, one of the largest towboat operators on the mighty Columbia River, cites its experience with a pair of 400 hp. direct reversible Atlas Diesels installed in its tow boat *Shaver*, to substantiate their contention that slow speed and heavy duty construction resolve themselves into low maintenance costs.

The *Shaver* was originally a steam powered stern wheeler, and due to the favorable experience they had had with a number of other Atlas Diesels installed in their river tugs, they decided to convert this vessel into a Diesel propelled twin screw, tunnel stern motorship.

J. H. Johnston, pioneer naval architect, boat builder and propeller expert was assigned the task of drawing plans for conversion. The job was particularly unique inasmuch as both the method of propulsion and the type of power

were to be changed, and boatmen of the Columbia River and Puget Sound followed the conversion closely.

A pair of 400 hp. direct reversible Atlas Diesels were chosen for main propulsion and a tunnel stern was constructed for the twin screws. Two main rudders were placed aft of the propellers and a pair of monkey rudders forward, all controlled by a Johnson-Fries pneumatic steering gear. The towing winch was also changed over to air operation. The structural changes were completed and machinery installed in the late summer of 1926 and her trial trip in September brought out many famous names in the marine fraternity of the Pacific Northwest.

Three years passed, during which the *Shaver* gave unparalleled reliable and economical performance in towing million foot tows from the lower Columbia River to the Portland lumber

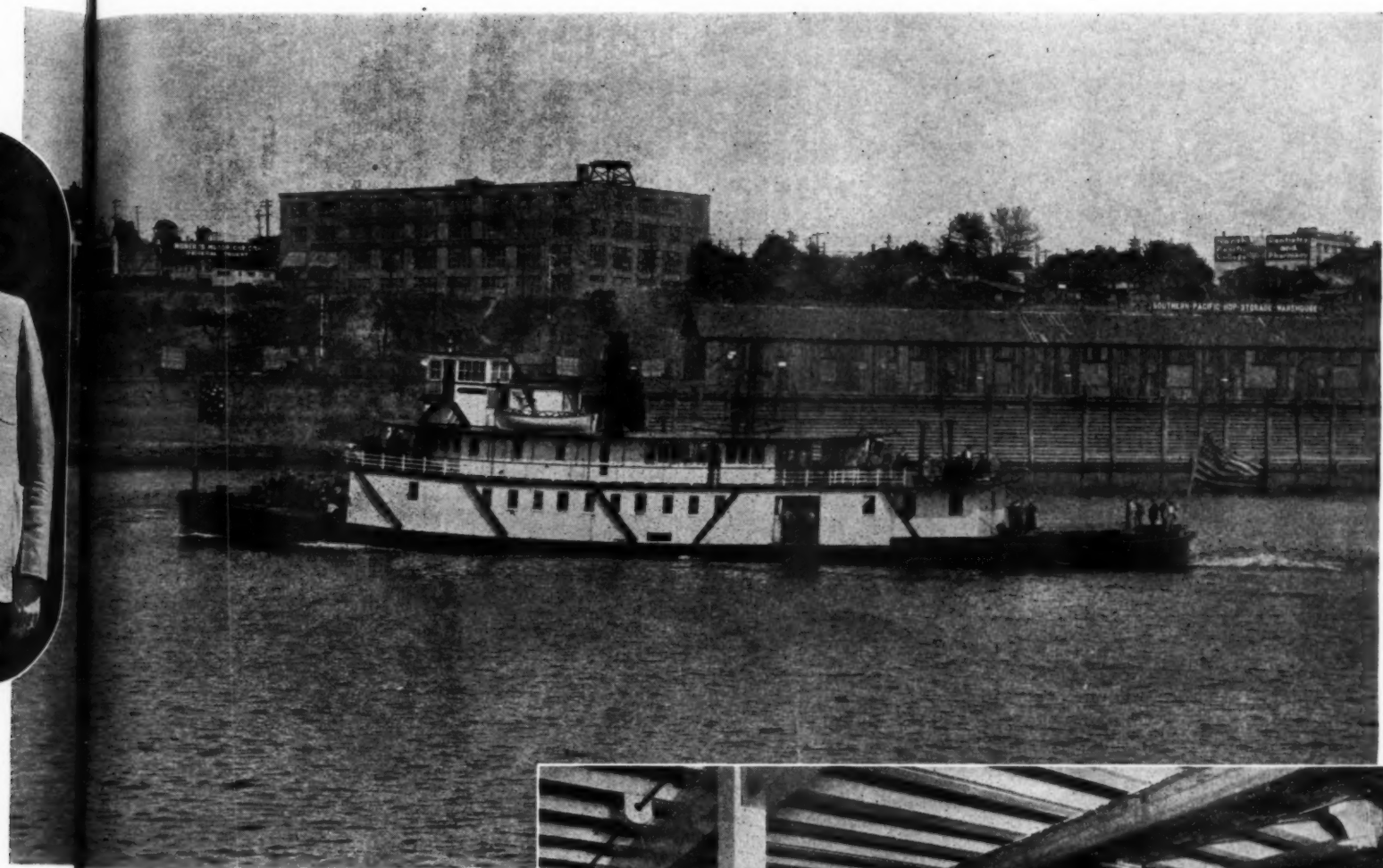
mills, and assisting in the towing of large Benson Timber sea-going rafts from Wallace Island to Warrenton, containing sometimes as much as eight million feet. At the end of these first three years the log book showed 17,500 actual working hours and the Shaver management decided it was time to lay up the boat and give the Atlas Diesels a thorough, routine inspection. They pulled the pistons, ground the valves, and installed new piston rings. Bearings were checked for the first time and an average of .005 shim was removed from each bearing.

Three more years passed, during which the *Shaver* engaged in identical service and upon completion of another 17,500 hours of operation the management decided to again make the same repairs. When the *Shaver* returned to service, after completing 35,000 hours of the toughest towing encountered in the business, the Shaver management made a complete ac-

Formerly was converted to Diesel.

counting maintenance period. very much prompted earlier. prised with four and power plant.

That is six years more since Shaver's conversion back to set of crankshaft of bearing as ever destroyed month.



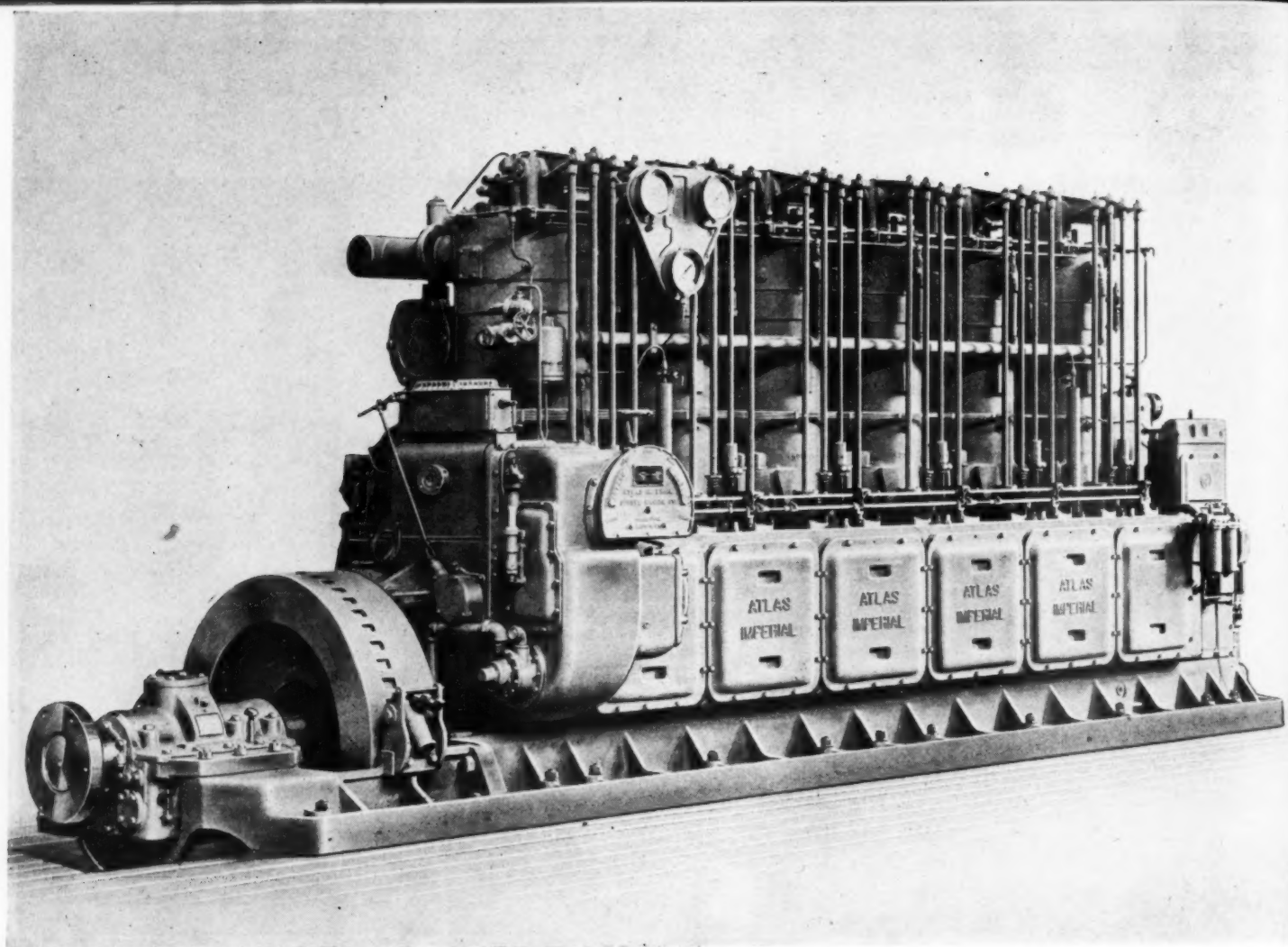
Formerly a steam stern wheeler, the "Shaver" was converted in 1936 to a twin screw tunnel stern with a pair of 400 hp. Atlas Diesels for main propulsion and a 50 hp. Atlas auxiliary Diesel.

counting to determine the actual cost of maintenance per horsepower per year for the six year period. They knew that the costs had been very moderate, which had perhaps failed to prompt them to make a complete cost analysis earlier. They were more than agreeably surprised when they got the final figure of seventy-four and six tenths (74.6c) cents per horsepower per year.

That is the history of maintenance for the first six years of the *Shaver's* brilliant career. Two more six year periods have passed since the *Shaver* was converted to Atlas Diesel propulsion back in 1926. During this period one new set of cylinder liners has been installed, the crankshaft has been rebored with one new set of bearings, and the *Shaver* is going as strong as ever today in spite of a fire which almost destroyed the vessel and necessitated a three month repair job in the shipyard.



Engine room of the "Shaver" showing the two Atlas main Diesels.



Shop view of the 6-cylinder, 400 hp. Atlas Imperial Diesel, two of which power the converted "Shaver."

The history of the Shaver Transportation Company is a long and honorable record of achievement closely interwoven with the history and development of the Pacific Northwest. George W. Shaver, the pioneer member of the family and its first president, arrived in Portland to settle in 1854, having crossed the plains to California in 1849 and then later settling in the Waldo Hills back of Silverton, Oregon.

George W. Shaver and his son, James W. Shaver, became interested in the boat business on the Columbia River and its tributaries when they associated themselves with other Pioneer Oregon men in the forming of the Peoples' Freighting Company in 1880. Later on, George M. Shaver, another son, entered the business, and in 1893 the father and the two sons organized the Shaver Transportation Company. At that time the company owned the stern wheel steamer *G. W. Shaver*, and in that year built the steamer *Sarah Dixon*, these vessels being named after George W. Shaver, and his wife, Sarah Dixon Shaver respectively. The company engaged in the freight and passenger business between Astoria, Portland, and The Dalles, and later on a younger son, Captain Delmer Shaver,

now president of the company, and Lincoln Shaver, who had been engaged in the river boat business on the Fraser River, entered the organization.

The company gradually enlarged its fleet with more stern wheelers, and in 1902 began to change its operation from a freight and passenger business to the log towing service, and up until 1910 the Shaver fleet consisted entirely of steam stern wheelers. In that year they bought their first gasoline powered towboat, the *Echo*, a 65 ft. launch powered by a 125 hp. Imperial gasoline engine. At that time the relationship between a prominent towing concern and an engine builder known as the Atlas Imperial started, and has been continuous for 34 years.

The Atlas Engine Co. and the Imperial Gas Engine Co. which were finally merged, were both builders of gasoline engines, and in 1914 produced their first Diesel. It did not, however, go to the Shavers, but was built for stationary service in a mine which later failed, and the engine was then installed in a ferry boat called *The Islander* now operating in Southern California, and that same engine is still running

daily in the same ferry.

Always alert to any advance which might improve their service and lower their power costs, the Shavers kept a weather eye on Diesel development and in 1923 the ice was broken and they bought a 90 hp. Atlas Diesel for their boat *Echo*. The new Diesel proved reliable in performance, its operating cost was low, and the maintenance had been negligible. If they had their fingers crossed when they bought their first Atlas Diesel, it took them just one year of successful experience to uncross them, for in 1923 they bought a 300 hp. Atlas Diesel for their new 77 ft. *James W* built by the Portland Shipbuilding Company from designs of J. H. Johnston. Two more years' experience and they installed in their steam tug *Pearl* a 200 hp. Atlas Diesel. The next year, 1926, they converted the steam stern wheeler *Shaver* into a tunnel stern, twin screw Atlas Diesel powered vessel as noted earlier in this article. In 1926 they added the 90 hp. boat *Charm* to their fleet, and in 1930, through consolidation with the Smith Transportation Co., they added Atlas powered tugs *Wilavis*, 250 hp.; *Wampus*, 50 hp.; *Smithy*, 400 hp.; *Deck Boy*, 65 hp. and *Norah*, 75 hp.

FOUR DIESEL PURSE SEINERS

By

CHAS. F. A. MANN

THE wood and Diesel commercial shipbuilding industry seems to be one of the very few with no reconversion headaches. A vivid example of the utter simplicity of Reconversion is the newly finished fleet of four modern Diesel Purse Seiners turned out by Puget Sound Boat Building Co., the last delivered March 20.

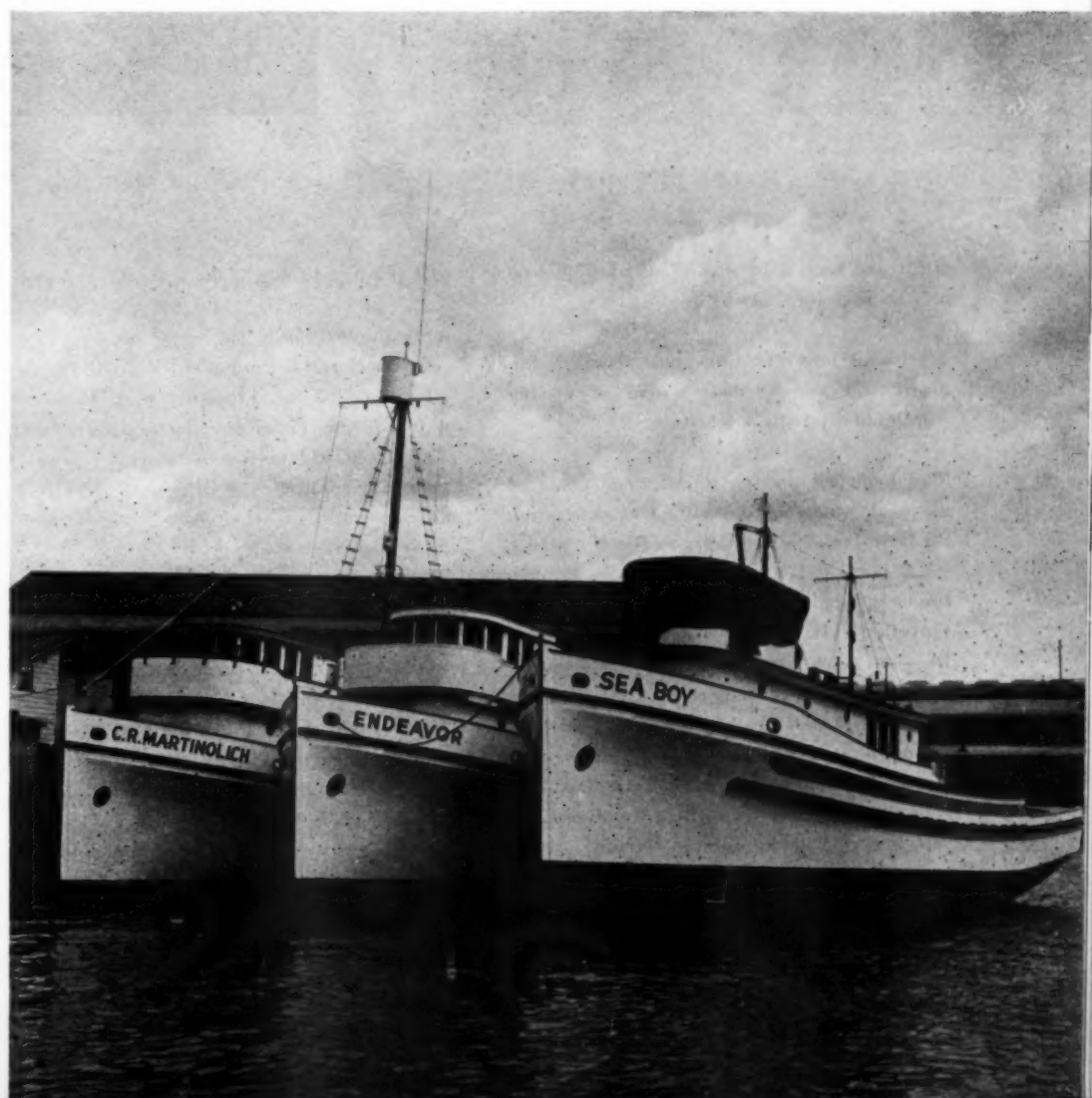
Four almost identical purse seiners have been completed for California Pilchard Seining since September. They are the *Endeavor*, owned by Joe G. Crivello of Monterey, J. J. Petrich & John Breskovich of Tacoma; the *C. R. Martinolich*, owned by J. D. Martinolich of Tacoma and Vincent Cefalu of Monterey; *Sea Boy*, owned by Marco Lucido, Joe G. Crivello, Frank Russo and Salvatore Russo all of Monterey; and the *Vagabond*, owned by Mariano Torrente of Monterey.

All four are 86 x 22.5 x 11.3 depth. The *Endeavor* and *C. R. Martinolich* each carry 250 hp. six cylinder Enterprise Diesels and the *Sea Boy* and *Vagabond* each carry 400 hp. 6 cylinder Enterprise Diesels. All four carry crew's quarters for 12 and have conventional roomy galley, compact but semi-luxurious living quarters; engine and auxiliaries far forward with pilot house control; and a capacity of 165 tons of



Marco Lucido of Monterey, at the wheel and W. L. Healy, President, Puget Sound Boat Building Corporation.

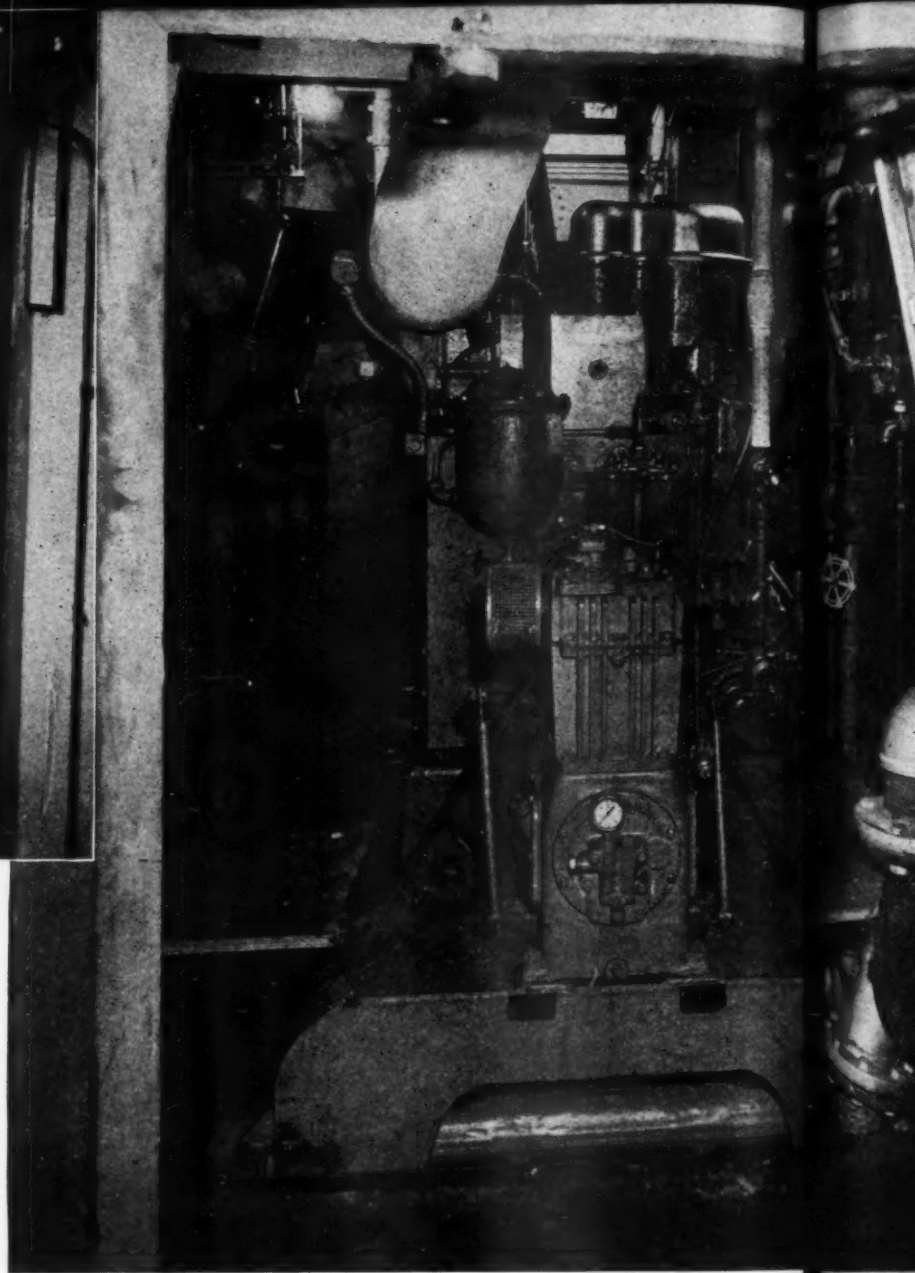
Three of the new Diesel purse seiners in various stages of completion. All photos in this article by Turner Richards, Tacoma.





The wheel house is identical on all four vessels.

After end of the main, 400 hp. Enterprise Diesel on the "Sea Boy."



fish in the large hold aft and an additional 60 tons on deck for short haul.

The usual heavy fir hull construction is followed and the lineshaft system of driving winches and pumps is a feature.

The *Endeavor* and *C. R. Martinolich* are of identical layout mechanically. One description fits them both. The *Enterprise Diesel* has 10½ x 12 bore and stroke and operates through bronze tailshaft a 58 x 40 Doran three bladed propeller. The main Diesel has a 3 kw. Westinghouse generator belt driven in addition to a 2 kw. Kohler generating set, both charging a 110 volt Exide battery set. The lineshaft drive, through a Twin Disc clutch, operates the scine winch and the anchor windlass, both a product of Puget Sound Boat Building Corp. A Gould deck pump operates off this shaft, as

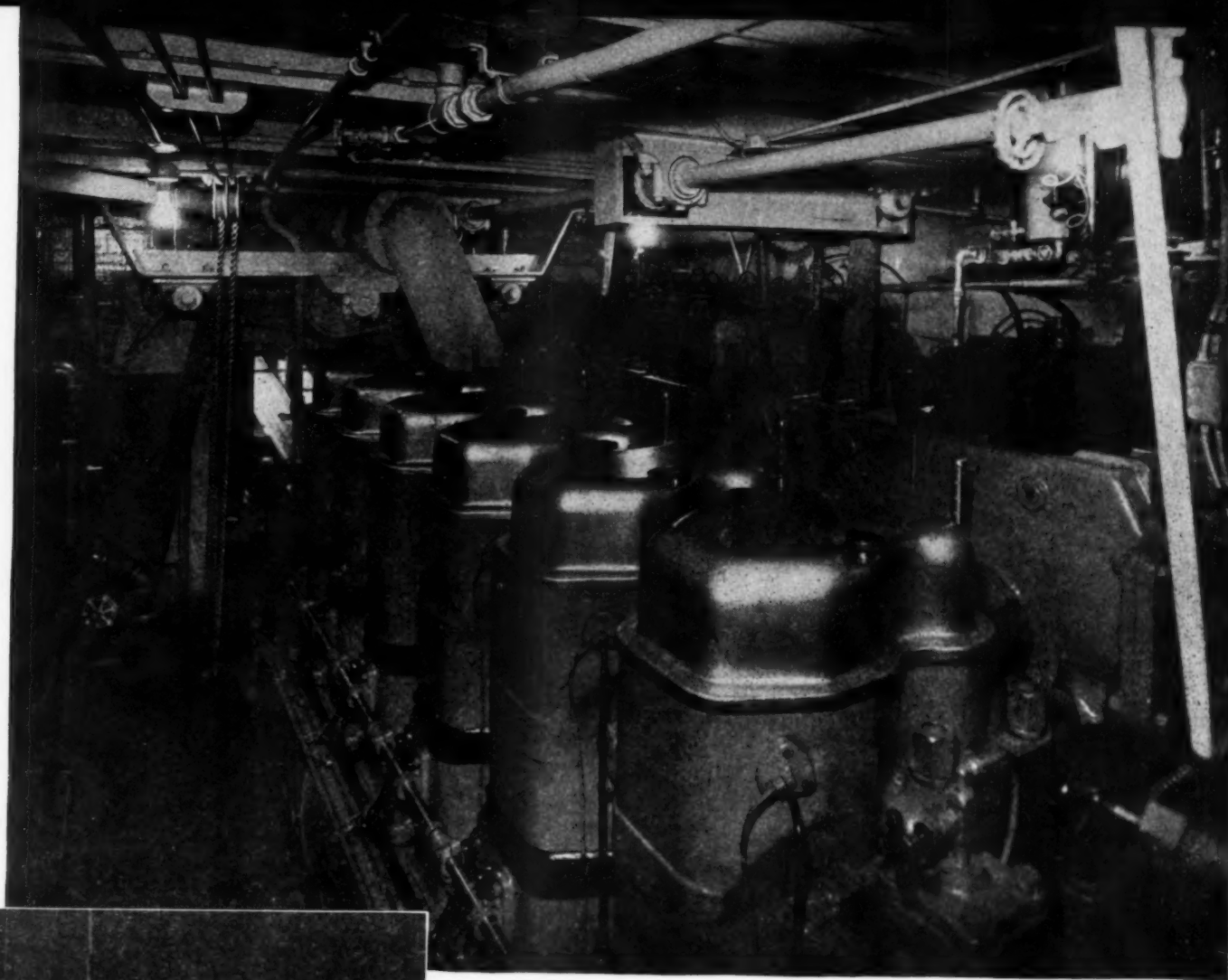
well as two 2 in. Fairbanks Morse bilge pumps.

A small Wisconsin gas engine-driven Yager gen. service and fire pump is also fitted. Hughes oil range; 1/3 hp. Frigidaire unit; Fisher 50 watt radio and Fisher direction finder are fitted. Two McDonald fresh and salt water sanitary pumps are fitted, as well as a Walter Kidde CO2 system.

The *Sea Boy* and *Vagabond* are almost identical as to equipment. Their 6 cylinder Enterprise Diesels have 12 x 15 in. cylinder sizes and likewise deliver their rated output at 400 rpm. The *Sea Boy* carries a 65 hp., 6 cylinder Buda Diesel auxiliary set, operating besides the 4½ kw. Westinghouse generator, a lineshaft drive, through Walters reduction gear and Twin Disc clutches. This lineshaft may also be operated through a chain drive off the main engine. Con-

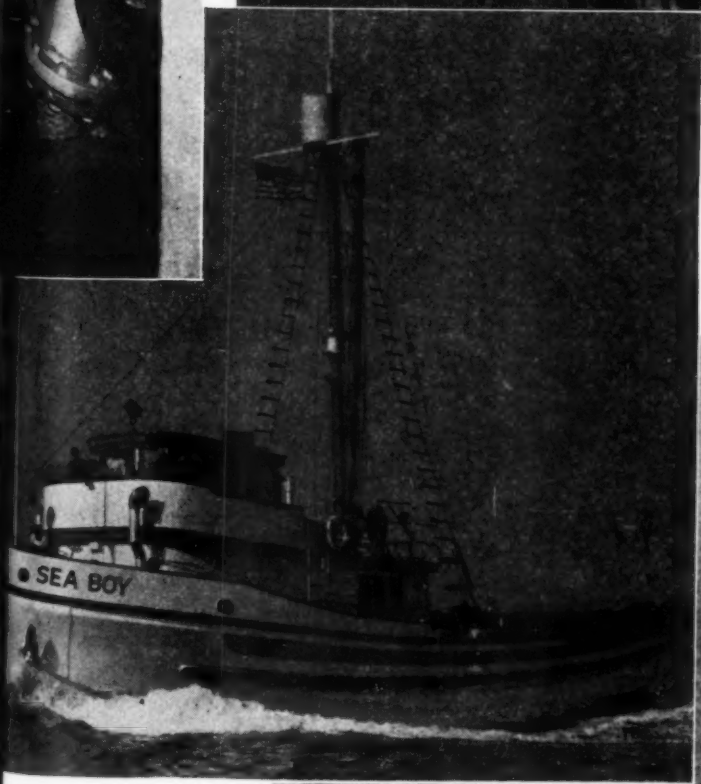
nected to it are the scine winch and anchor windlass, two 2 in. F.M. bilge and 2 in. Yager fire and general service pumps. A 110 volt Willard Battery set is carried, as well as 65 watt Northern radio and Fisher direction finder and an Atlas compressor. These two vessels carry Lang oil ranges; 2 McDonald sanitary pumps; a 1.3 hp. Frigidaire unit and Walter Kidde CO2 fire fighting system. The *Sea Boy* carries a Doran 62 x 44 in. three bladed bronze propeller. The *Vagabond* has a Caterpillar Diesel auxiliary engine, with hookup identical to the *Sea Boy*. The *Vagabond* has a slightly larger wheel—66 x 38 in. Also an additional 3 kw. generator belt driven to the main engine.

Puget Sound Boat Building Corp. is headed by Wm. L. Healy and will shortly start construction of several junior size tuna clippers when its Army power barge contract is finished.



Enterprise, 400 hp., main Diesel, center, and Caterpillar auxiliary Diesel, upper right, on the "Vagabond."

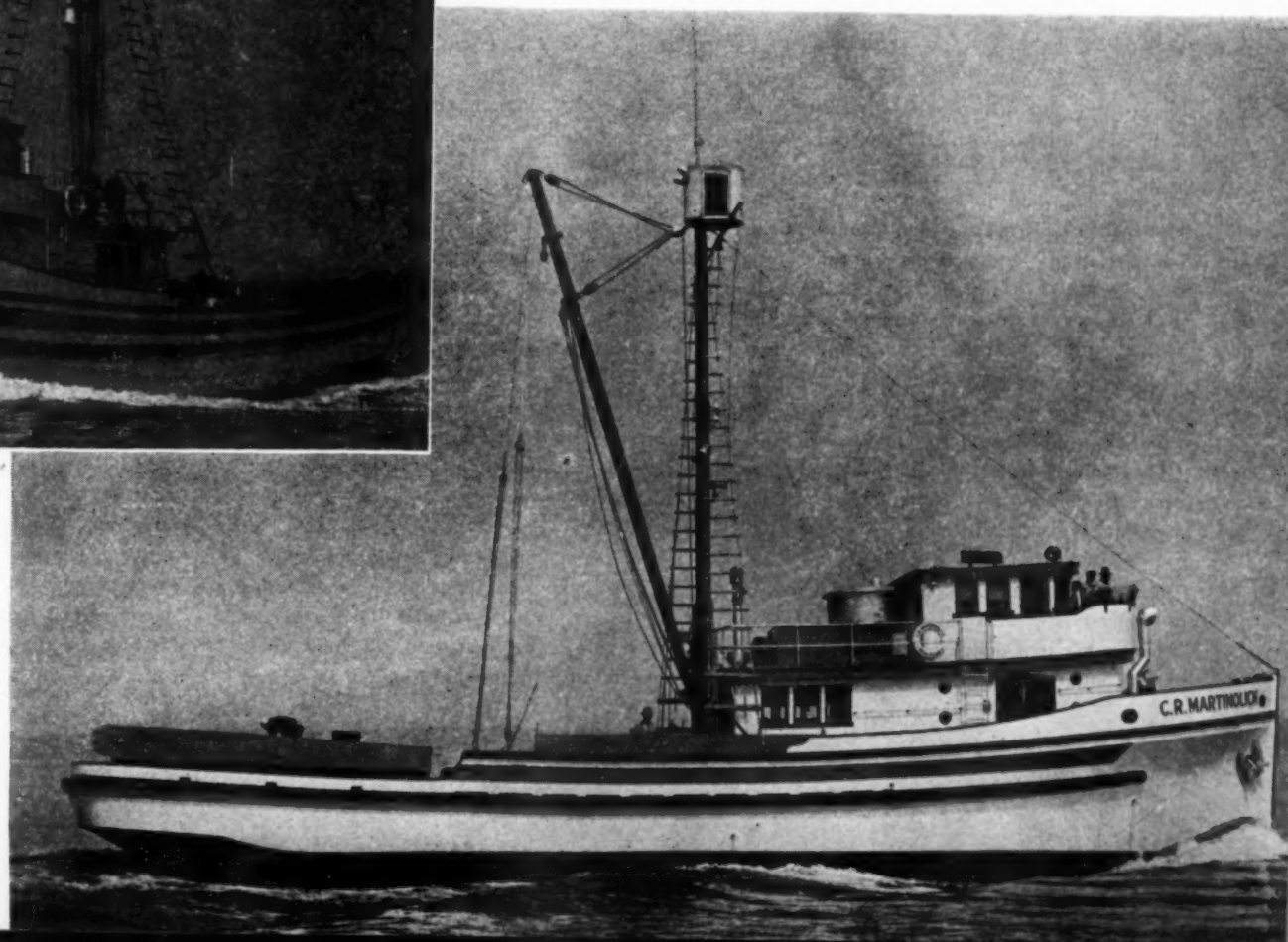
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The "Sea Boy" on trial run in Puget Sound.

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In the cab of the new Baldwin Diesel locomotive, left to right: G. W. Burnett, Baldwin Locomotive Works, Eastern regional service supervisor; W. H. Stevens, Baltimore & Ohio R. R., Road foreman of engineers, and Guy Wiles, B & O, supervisor of Diesel engines.

A NEW DIESEL-ELECTRIC ROAD LOCOMOTIVE ENTERS THE FIELD

By WILL H. FULLERTON

DURING the past few weeks a new Diesel-electric road locomotive unit has been touring the country and demonstrating its distinctive features to hundreds of railroad officials under the auspices of its collaborating designers and builders, The Baldwin Locomotive Works and Westinghouse Electric and Manufacturing Company. Having performed on scheduled runs over the B & O for a period this new 2000 hp. unit was taken across the country and back, rolling, en route, over the rails of the Reading; Central of New Jersey; Richmond Frederick & Potomac; Atlantic Coast Line; Seaboard Air Line; Central of Georgia; Louisville and Nashville; Illinois Central; Chicago and Eastern Illinois; Rio Grande and Western; Missouri Pacific; and Wabash railroads.

Diesel-electric road locomotives are not new to the operators of many of the lines visited on the tour but new design features do, and it is hoped, always will attract deserved attention.

Of these the new Baldwin unit has several worthy of note. Basically the unit is of clean design, inside and out. Its roomy, full vision cab rises smoothly from a streamlined nose that blends with straight unbroken body lines. Its general appearance gives the impression of a sturdy, compact and well coordinated unit. Interior arrangement permits free passage around and easy access to all machinery.

The power units are two Baldwin, 8-cylinder, $12\frac{3}{4} \times 15\frac{1}{2}$ in. in-line Diesels of 1000 hp. each, direct connected to Westinghouse generators furnishing current to four traction motors which drive the axles through a 21:58 gear ratio for a maximum speed restriction of 90 mph.

Details of engine construction include welded steel bed plate and frame. The frame forms the housing for the cylinder liners and the upper part of the crankcase. Cylinder liners are centrifugally cast nickel iron, porous chrome



Close-up of the new Baldwin, 2000 hp. Diesel-electric road unit.

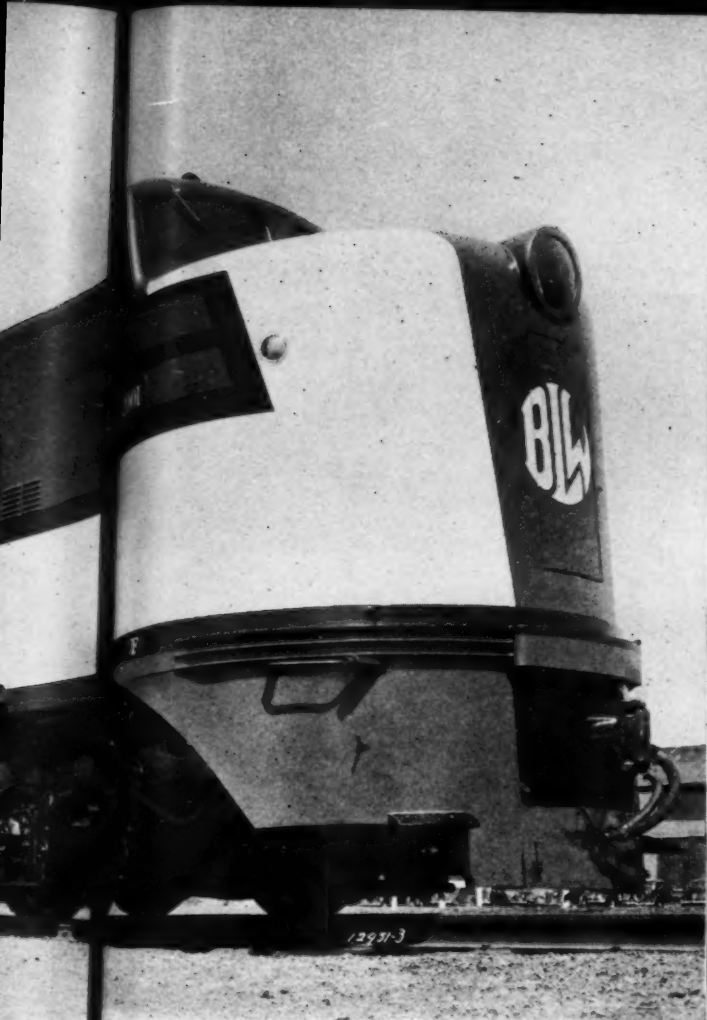
plated with the upper ends flanged to fit into the counterbore of the frame. Pistons are of heat treated aluminum alloy castings of flat top design. Cylinder heads are individual castings with a water cooled turbulence combustion chamber offset from the cylinder center. The fuel system is solid injection type with spring loaded, multi-hole spray nozzles. Individual injection pumps are mounted on each cylinder. The fuel system is protected by a series of cartridge type filters. A gear-driven hydraulic relay type governor regulates the quantity of fuel delivered by the injection pumps and is manually controlled from the cab. The governor oil pressure actuates the load control valve in correct sequence through the exciter field of the electric transmission system. An overspeed stop, geared to the camshaft and independent of the governor, acts positively to close all fuel racks. The lubricating system is of the full pressure type. Lube oil is circulated by a positive displacement gear pump chain driven from the crankshaft. The engines are started by motorizing the generators.

Among several new developments featured in this unit are the Air Throttle Control, Automatic Wheel-slip Control and Automatic Tem-

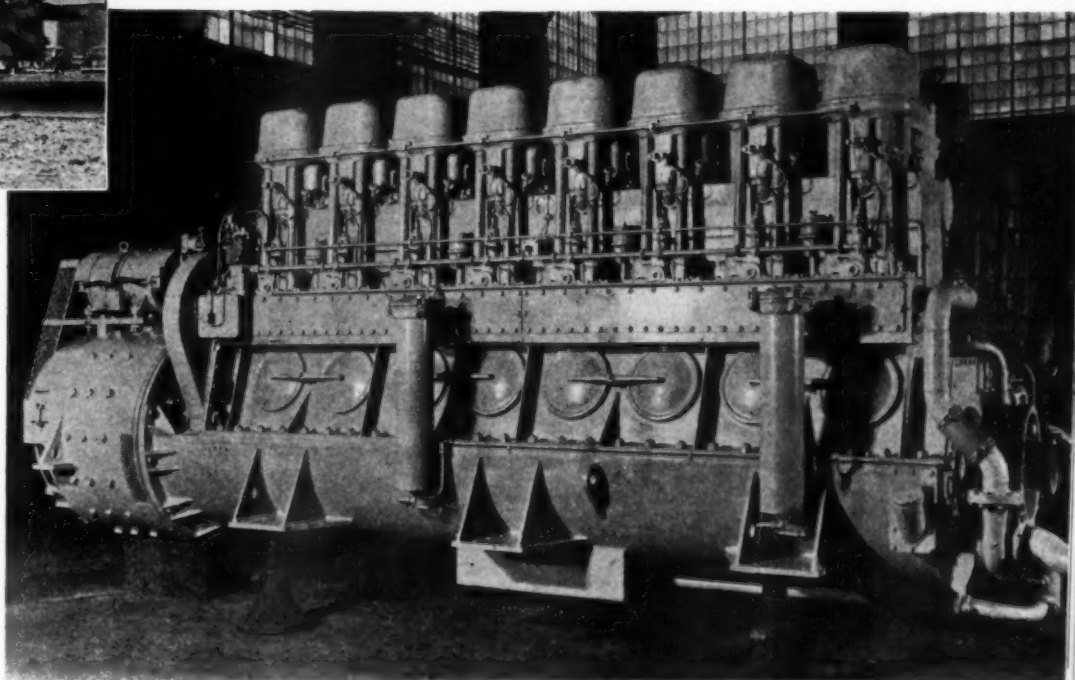
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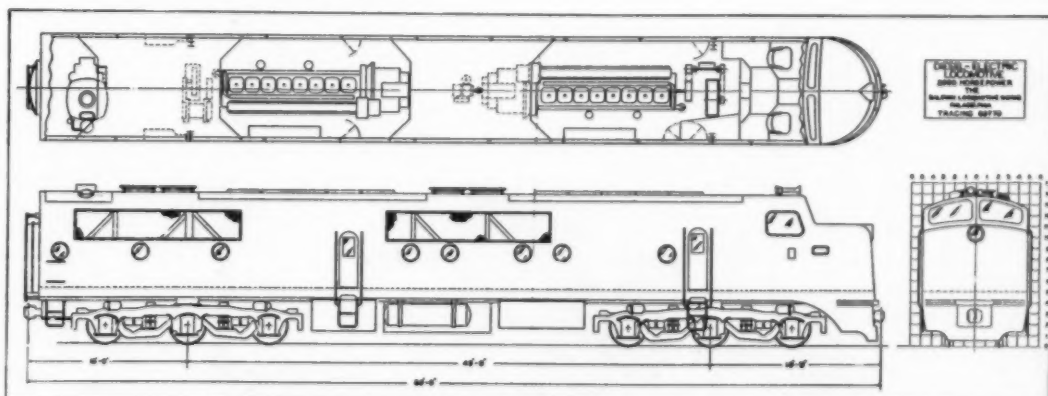
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Shop view of the six-wheel power truck assembly ready to receive the chassis.



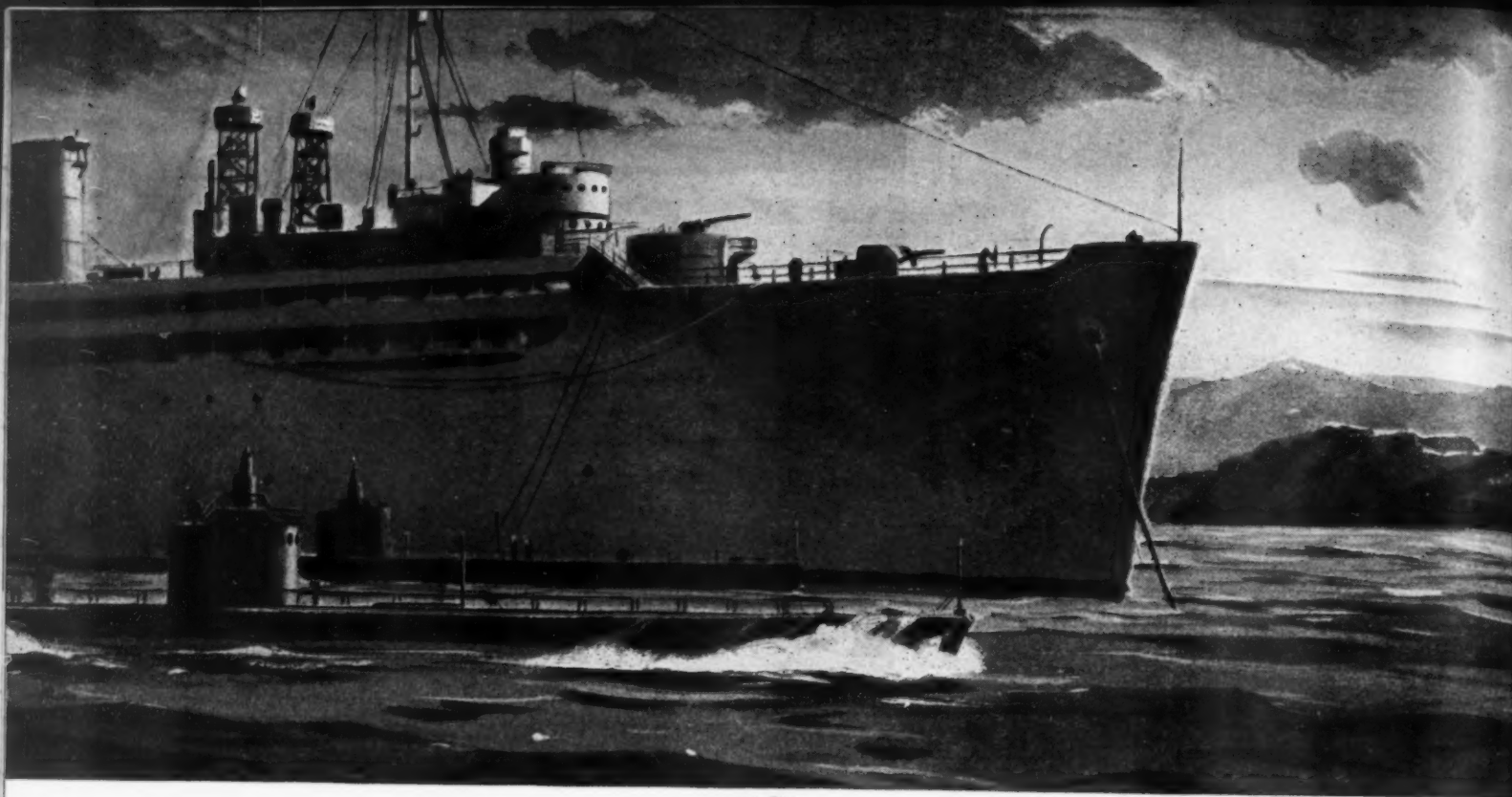
Shop view of the 1000 hp. Baldwin Diesel and Westinghouse generator, two of which power each road locomotive. Below: Plan diagram of machinery arrangement and side elevation.



perature control. In the functioning of the Air Throttle Control the only connection between control valve and engine is a single pipe; there is no mechanical linkage. With the engine idling, movement of the control handle establishes the electrical connections, then actuates the governor operator. Location of the graduating control handle determines the degree of governor action. This appears to be a highly efficient and simplified system of throttle control.

With the Automatic Wheel-slip Control incorporated in the Baldwin-Westinghouse unit it is claimed that the drivers do not continue to slip and spin when starting a heavy load or under bad rail conditions. The instant traction is lost the speed of the prime movers is automatically throttled down and when slippage ceases the engine speed smoothly increases to that demanded by the throttle position. No manipulation of the throttle is required to compensate for wheel slippage.

Engine temperature is automatically regulated and maintained at optimum operating level by thermostatically controlled radiator shutters. A separate radiator for each engine is located under the roof of the engine compartment.

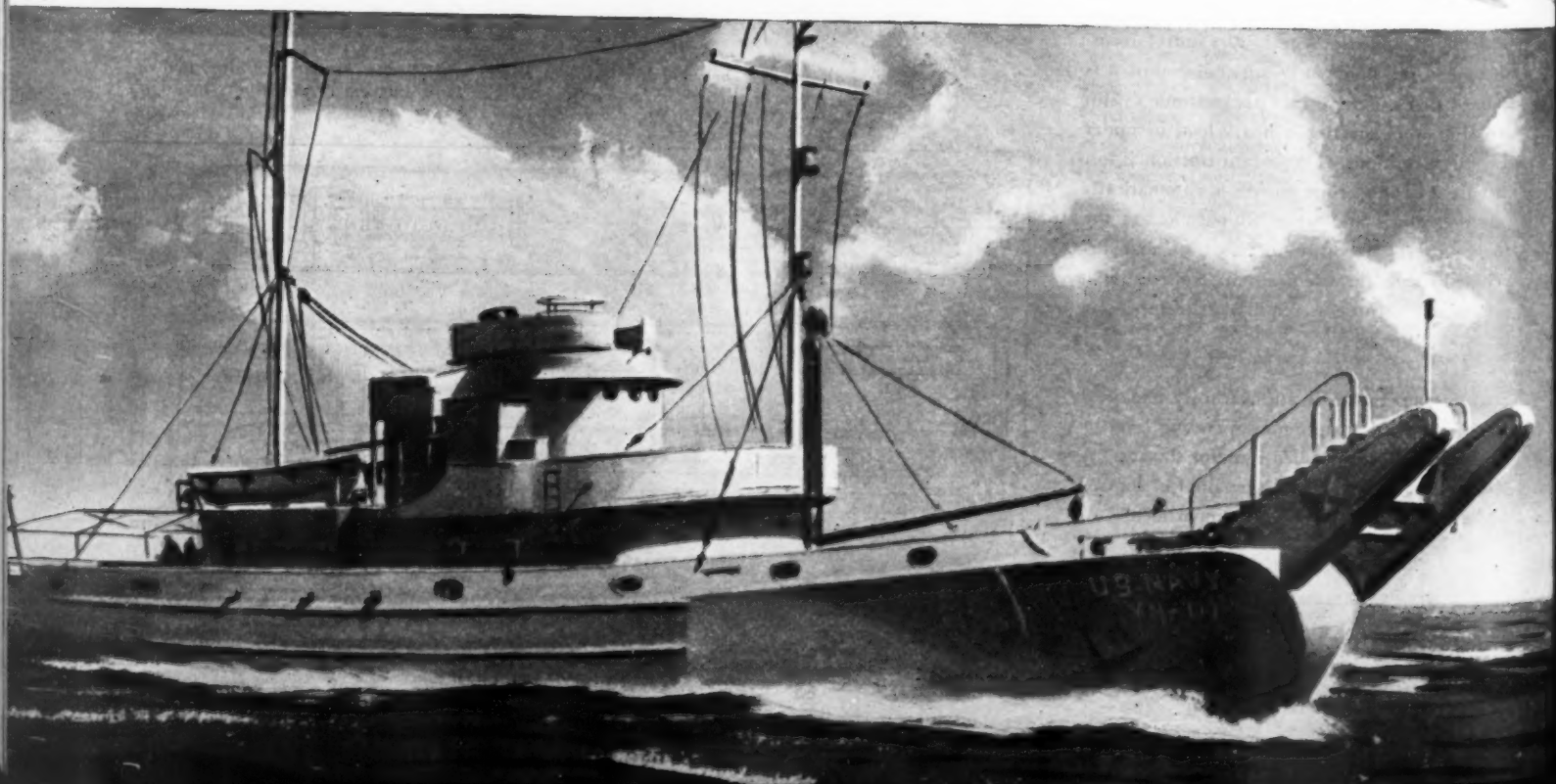


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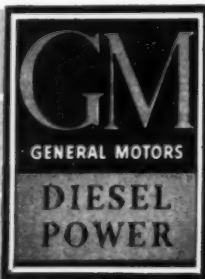
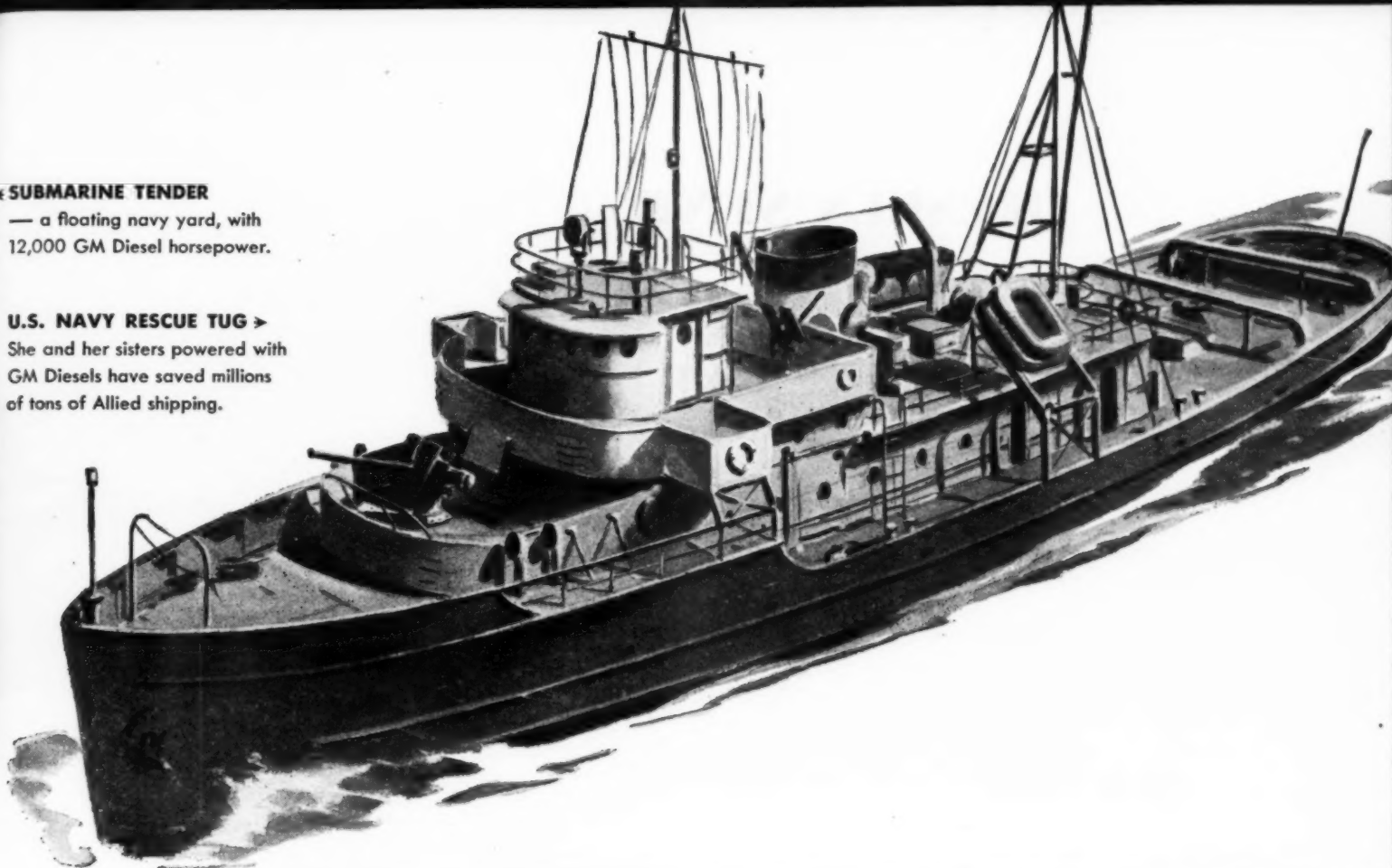
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◀ SUBMARINE TENDER

— a floating navy yard, with
12,000 GM Diesel horsepower.

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She and her sisters powered with
GM Diesels have saved millions
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*Outwardly these efficient ships could scarcely look
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KEEP AMERICA STRONG • BUY MORE WAR BONDS

DIESELS SEND EARLY SPUDS TO WAR!

By F. HAL HIGGINS

THE Army, Navy and civilians will continue to get all the potatoes they can use because the Diesel tractor is on the job turning up a lot of virgin sod in California, Oregon and Idaho to enlarge the nation's spud patch as big as needed. Your Old Reporter has just come back from a little 1100-mile swing down the California Coast and back through the Great Valley and saw the last of the early potatoes going into the deep mellow soils of the Shafter-Wasco area northwest of Bakersfield. Here is where the early potato of California has really gone to war the past four years in the most phenomenal boom of potato history in the West. The jump in acreage is from about 1,000 in the Kern county area here to 52,000 last year. The best opinion of the "potato experts" around the El Tejon hotel is that 1945 will hold up to this acreage with possibly a shade increase.

"Johnny" Tozzi, one of the big growers with his father, has seen the whole potato picture from start to the wartime crest of 1945 and knows it from ground to market. The Tozzis have out 700 acres of potatoes in different areas around Bakersfield. He and his father are emphatically Diesel mechanized growers and declare it couldn't have been done so easily and surely without. "The first experimental plantings of early potatoes here were made by Lodi men in 1936," said Tozzi junior. "By 1939, when the crop was planted and harvested before any war in Europe was started, there was around 9,000 to 10,000 acres in early spuds in Kern county. The war stimulus jumped the acreage to about 16,000 in 1940. By '41, it went up to 28,000; in 1942, it was close to 40,000. In 1943 and 1944 it continued to rise to 48,000 and 52,000 in spite of guayule planting of much good potato land by the Government.

"The potato men have been under ceilings most of the time," he added, "though for three weeks due to frost hitting the crop last year, the price went from \$2.75 to \$4.00 for a short spurt. We don't have to fertilize much the first year or so, as this Kern county land is rich

virgin soil that has never been farmed. It has lain here as cow pasture for centuries, or at least since the Spanish dons first brought in cattle to pasture it. We follow a rotation of potatoes, peas, alfalfa, grain, usually. The best farmers are adding nitrogen now to get the best yields, as it pays big dividends. We use 600 to 800 pounds per acre of nitrates, though some go up to 900 pounds.

"As to equipment, there is a lot of local shop special potato machinery developed here. Over at Edison, a crossroads spot in the wild flower heaven north of Arvin, was Isaacs, who built a 2-row potato harvester that is a honey. This year he is trying out an elevator to drop the spuds into the truck from the harvester as they are dug. The problem is to get rid of vines and clods and shake out most of the dirt on the spuds, of course. That has always stopped the efforts to harvest potatoes in one operation by having the digger elevate into trucks or sacks. Too much dirt came up with stones, vines, etc.

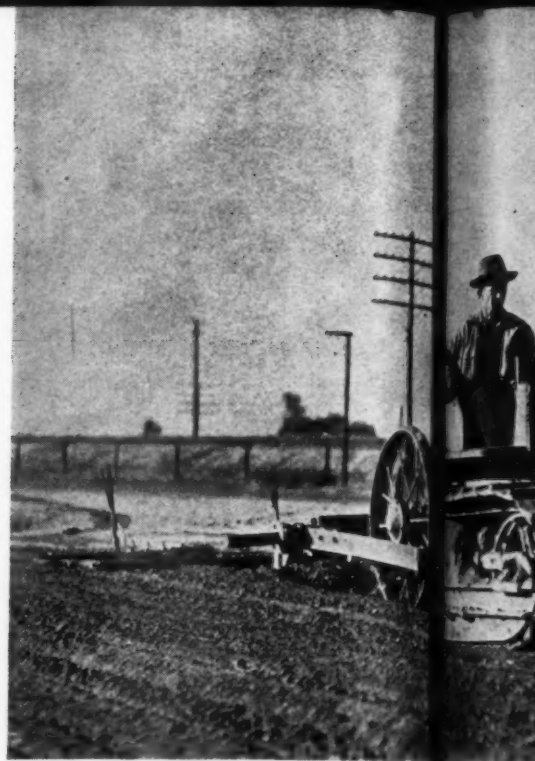
"Besides the big Diesel tractors like Caterpillar, Allis-Chalmers, International and Cletrac, we have all the row-crop tractors to cultivate the crop. They are all here: Massey-Harris, Oliver, Minneapolis-Moline, Deere, International, Ford, Allis-Chalmers. What the little shops do to add attachments is something worth seeing, too. At both Shafter and Wasco, the tractor dealers and specialty shops all work on the potato problems of their growers to give them what they want to permit one man to handle everything from a tractor seat from seedbed through cultivation and planting, fertilizer application and harvest. Then there is a lot of shed machinery for washing, sorting, bagging the spuds for Government military or civilian demands. The chain stores get their spuds in any size bags from 5 pounds up, but the public wants their potatoes washed clean. That's the way they get them."

So, the writer drove over to watch the tail end of the early potato planting. This was on February 21, and the 52,000 acres or more was prac-

tically all planted. At Shafter, he stopped to watch with admiration the way a big Allis-Chalmers, General Motors, 2-cycle Diesel-engined tractor handled a little chore like bulldozing the foundation-filled soil inside the concrete walls for a new potato warehouse on the tackage of the railroad. It was uncanny the ease with which the operator of this HD14 went over to the opening in the concrete wall and picked up a snootful of dirt that it then pushed over into a corner, smoothing and packing all the time to keep the thing level and neat. The contractor was L. E. Town of Bakersfield, who handles all kinds of tractor work in the way of excavating around oil field construction, war jobs on airports and camps, etc.

The new Allis-Chalmers dealer at Bakersfield, who had just taken over this territory, pointed to this tractor and owner as one of his prize teams in the Bakersfield area where every farmer and oil field man is an expert in heavy equipment. Kern county experiences in judging and using tractors goes back to the early '70's when Col. Hyde brought his "steam wagon-plow" down from San Francisco and went to work at reclaiming some of the raw cattle pastures not far from this city of Bakersfield.

They never even dreamed that oil would one day focus the eyes of the world on this area, as the great central valley of the San Joaquin was regarded as little more than a desert then. Funny thing about Col. Hyde's steam tractor of the 1871-5 days: it had rubber tires and chopped up the soil with rotating blades instead of plow shares.



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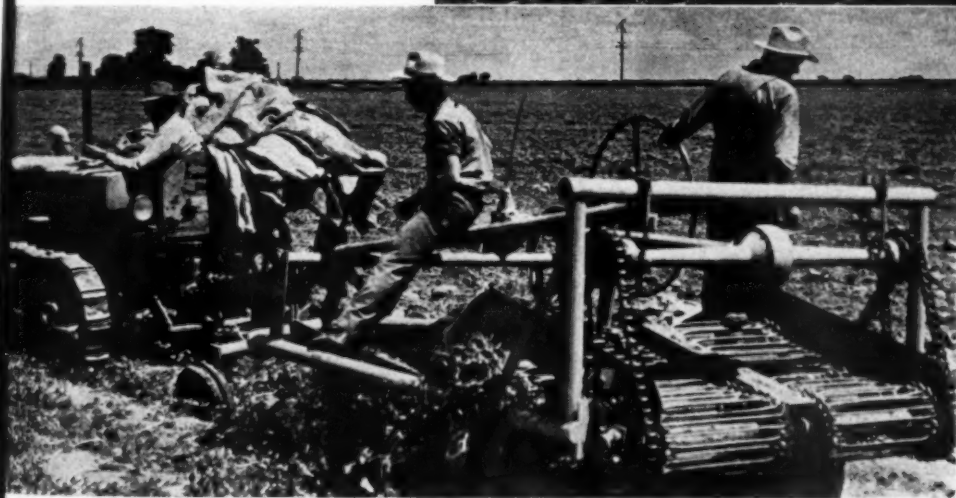
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International Harvester Diesel tractor preparing potato seedbed near Wasco, California.



Plow and drag meet with their Caterpillar Diesel tractors preparing the soil for early potatoes in Kern County, California.



A Caterpillar Diesel tractor speeds up harvest, hauling a 2-row digger in Kern County, California, early potato fields.

Leaving the town Allis-Chalmers Diesel at its little chore of filling in the new potato warehouse on the outskirts of Shafter, we drove on into and through the town and up the highway north to Wasco after checking with Diesel tractor dealers in both towns to locate the planting and seedbed jobs. Just south of Wasco was seen an International TD 6 doing a grand job of getting a seedbed ready by deep tillage methods and a drag harrow behind the Dyrr chisel it was pulling. It was a perfect seedbed that

sank your DIESEL PROGRESS cameraman to his angles as he walked through it to get this shot.

There were Caterpillar D4s and D2s at work planting and plowing, too. Back on Highway 99 as he turned the car north towards Tulare was another International Diesel putting in potatoes with a 2-row planter with fertilizer attachment. The International dealer, Karpe, who rose from a blacksmith shop to millionaire

status here in the last quarter century, is one of the most aggressive and successful Diesel tractor dealers in the U. S. His Caterpillar rival is the famed Cousins with headquarters at Hanford and a big branch at Bakersfield and another branch in the potato town of Shafter. The Allis-Chalmers dealer has his work cut out for him in this kind of competition but his 2-cycle GMC Diesel-powered crawlers are winning friends every day. And the early potato crop in Kern county will again be a record one. Further, if the U. S. Government wants more spuds, all it need do is ask and a few more sections of the famed cow pastures with their more famous underground black gold pools will be plowed up and put to spuds pronto, via Diesel tractors with Diesel trucks hauling the earliest potatoes on the western market to Army and Navy depots or metropolitan California marts.

SMALL WELDING SHOP GROWS UP



The plant of the National Welding & Grinding Co. in Dallas, Texas.

By DWIGHT ROBISON

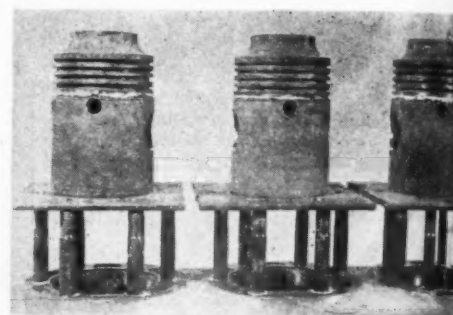
Editor's Note:—After visiting the National Welding & Grinding Co. one of our friends so infected us with his enthusiasm over the job they are doing that we wanted to tell the story for the benefit of thousands of DIESEL PROGRESS readers. John O. Wharton, Manager, is a busy and modest man and while we feel he pulled his punches in providing us with a brief outline of the vitally important job he and his associates are doing, we are nevertheless glad to present the bare facts.

STARTED twenty-five years ago as a typical alley welding shop, later acquiring some machinery for automotive repairs such as cylinder and crankshaft grinding and lathe work, the National Welding & Grinding Co. of Dallas, Texas, has developed into one of the largest and busiest repair shops in the Southwest, handling Diesel engine jobs from all parts of the country. And a mighty important operation this has become, especially in these days when engines have to be kept running in the face of heavy power demands and scarcity of new replacement parts. Crankshafts, camshafts, pistons, bearings, connecting rods and what not from tractor engines, oil field, refrigeration and central power plant and railroad Diesels find their way to this shop where careful attention to every detail results in complete and satisfactory salvage.

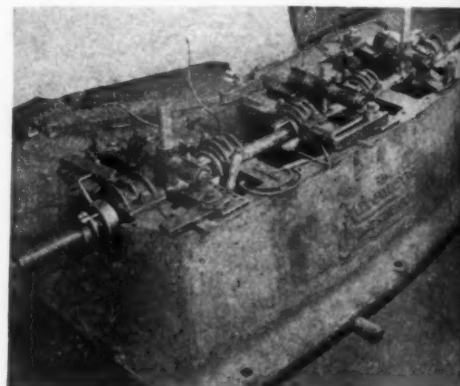
Manager, John O. Wharton, says, "We attribute

our splendid growth to a keen appreciation of accurate workmanship and the neglect of no detail, however apparently unimportant. We are at present doing a large amount of work for various Government projects, making available for service thousands of dollars worth of cylinder heads, crankshafts and other engine parts which would otherwise be useless." To paraphrase a familiar saying—this company is providing a better "mouse trap" service and distressed engine users are beating a path to their door.

Apparently there are no secrets in this huge repair operation. Intelligent, painstaking use of widely known methods and processes does the trick: Welding, metallizing, grinding and finishing to restore engine parts to their original strength and accuracy is the objective and the results are attested by thousands of satisfied customers. Four crankshaft grinders are operating continuously three shifts a day. Finished crankshafts turned out in the last few years run into the high thousands. The company has perfected a method of repairing cam lobes on certain types of Diesel camshafts. From a modest start, the word spread that National Welding & Grinding Co. satisfactorily salvages worn and damaged cam lobes until this type of work is coming in from the four corners of the United States.



Pistons that have been metallized but not finished.



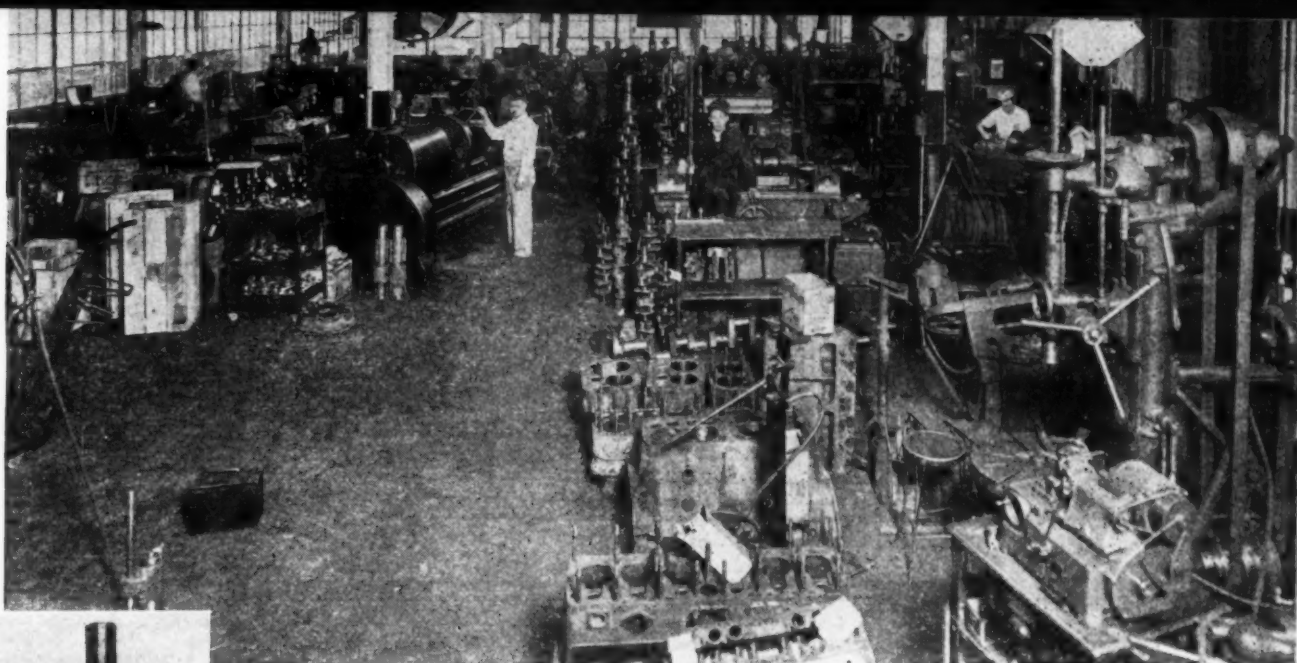
Line boring main bearings of a cotton gin engine.

A clinic conducted by Metallizing Co. of America

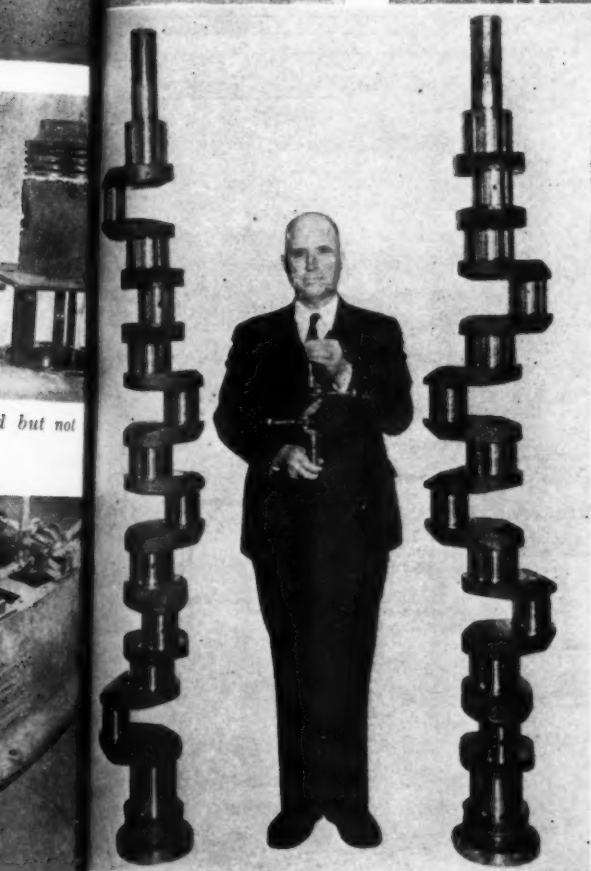


John O. Wharton

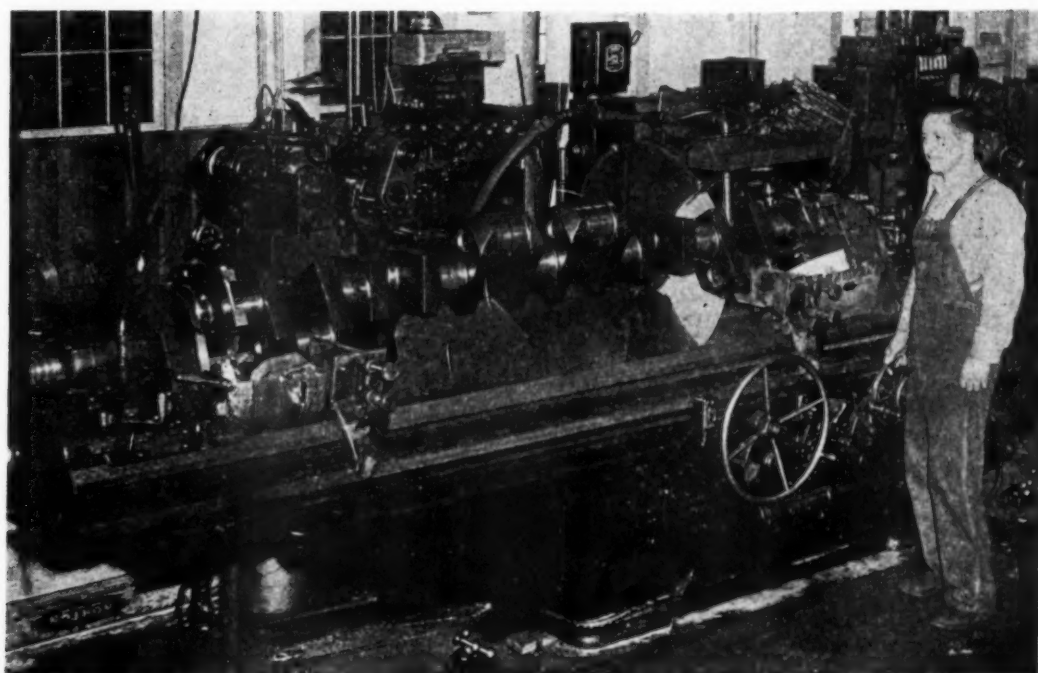
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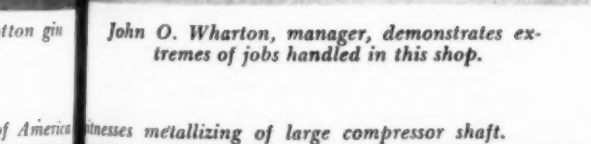
General view of the machine shop. Note variety of work in evidence.



John O. Wharton, manager, demonstrates extremes of jobs handled in this shop.



Grinding a large locomotive Diesel crankshaft.



Line boring main and camshaft bearings on an oil well drilling engine.

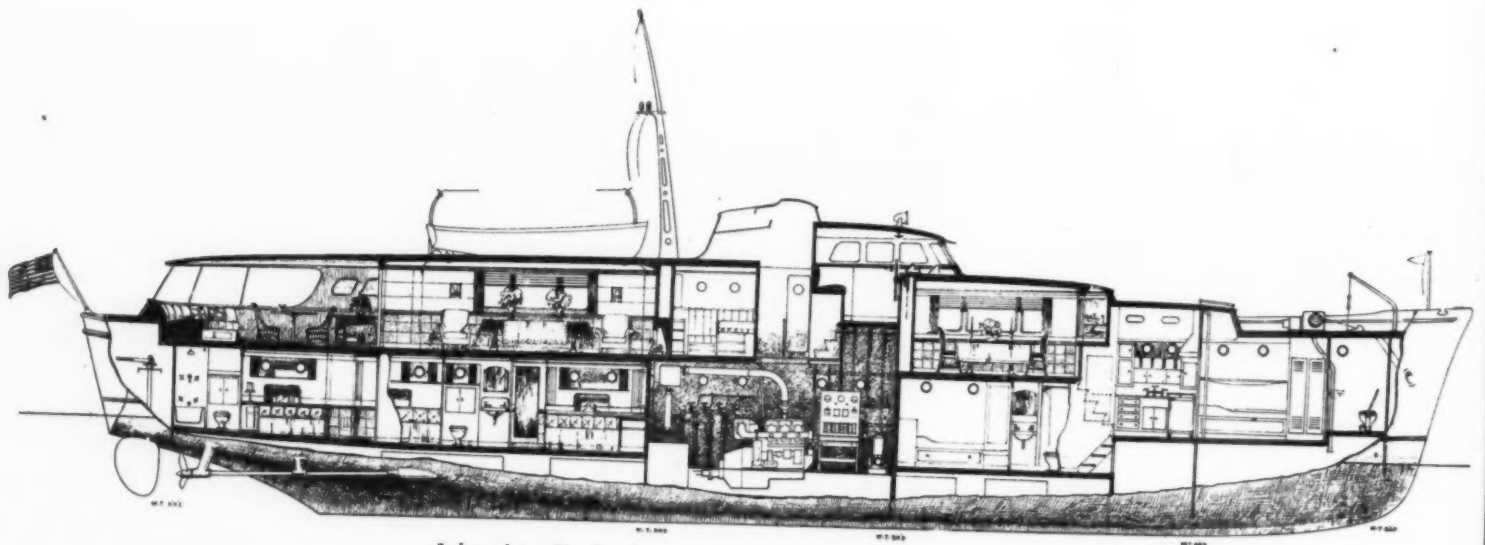


NEW WHEELER 105' TEE

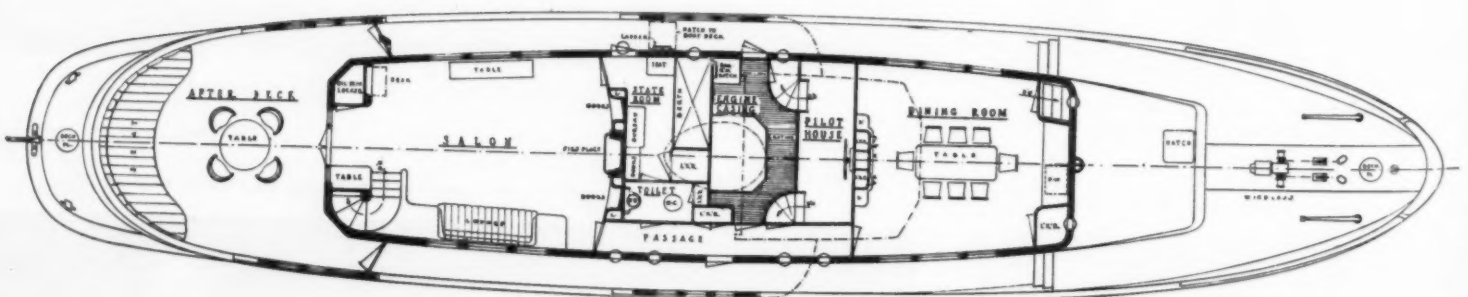


Outboard profile of the new Wheeler all-steel Diesel yacht.

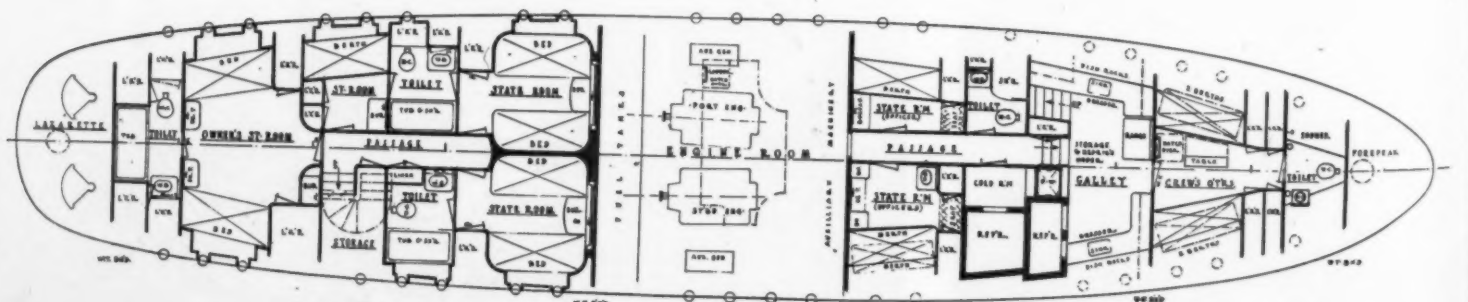
OUTBOARD PROFILE



Inboard profile showing arrangement of quarters and machinery.



MAIN DECK



LOWER DECK

Main deck plan, above and lower deck plan, below.

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105 STEEL DIESEL YACHT

IN keeping with the best traditions of fine yacht building, this sleek greyhound of the sea has been described by old-time yachtsmen as "a real ship and a beauty too." From the boards of John H. Wells one of America's outstanding naval architects, the Wheeler 105 combines the skill, ingenuity, and experience of designer and builder in producing a vessel of structural ruggedness with all the comforts of a real home on the water and plenty of sea-ability for operation in Northern or Southern waters.

A notable and outstanding feature of this vessel is its low operating cost estimated at about 40% of the cost of operating a 160 ft. vessel yet incorporating the same general comforts of the larger vessel. The power equipment will be varied to suit the ideas of the owner, but in general it is figured on a basis of two medium speed Diesel engines of about 300-400 hp. each, with speeds of approximately 12½ to 15 knots, depending on the type of power used.

Construction will be in accordance with the latest and best practice for highest classification by American Bureau of Shipping requirements; all-welded hull and superstructure; following large ship practice, fuel and water will be carried in inner tank bottom. Special methods will be used in the topsides to lighten the vessel. New ideas brought out through the war development will be found in both the construction and equipment.

The operation will be simplified with all the mechanical features that would make for easy and safe operation, including one-man controls at the wheel, new lighting effects; also latest type of plumbing, heating, ventilation and refrigeration. In other words, this vessel could be suitably used as a home in Northern or Southern waters, having a cruising radius in the neighborhood of 2000 miles at 10 knots.

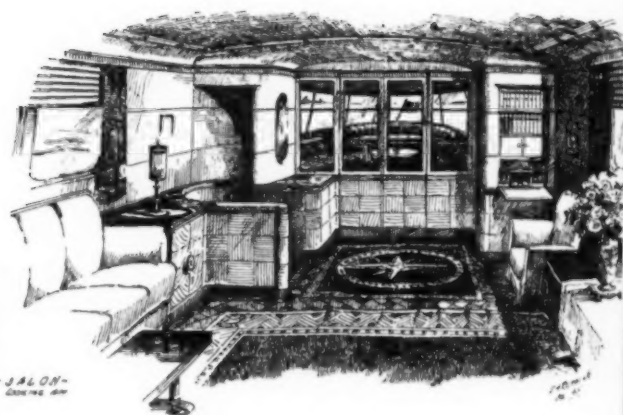
In general, the owner's quarters provide for three double staterooms and two single staterooms. The owner's room is located aft with private bath, ample locker room, dressers, bureaus, trunk and baggage storage, etc. Two comfortable beds are provided with plenty of floor space; in fact the owner's room is just as comfortable as you would find on a larger vessel.

A single stateroom is provided on the port side with lockers, bureaus and plenty of drawer space. The port bath room is used by this room and the double stateroom immediately forward. Two double staterooms are provided just aft of the engine room with two beds, each with drawers under, bureaus, lockers, etc. On the port side the bathroom is private to the double stateroom. Steel watertight bulkheads are located at the forward and after end of the owner's quarters, there being five watertight bulkheads in all.

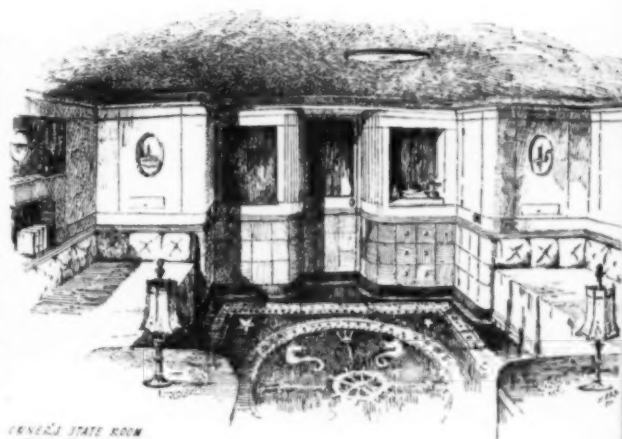
Going up the stairway on the starboard side, you enter the salon which is 21 ft. x 13½ ft. This is particularly comfortable with full length lounge, desk, table, chairs, etc. At the forward end are bookcases, lockers, and an electric fireplace. At the after end of the room the glassed in effect is such that it gives the sense of one large room combining the after deck and salon. The after deck will be entirely enclosed with storm doors and windows on either side, and a luxuriously comfortable lounge seat at the after end. The after deck is extended for ship operation.

Immediately forward of the salon is a deck stateroom with single berth, and upper if desired, with toilet adjoining. This toilet also serves as a day toilet off the passageway. Immediately forward of this is the engine casing with gratings and cross passage from one side of the vessel to the other. The pilot house is particularly comfortable, having a berth length seat in the after end, steps from the inside passage on the right side, and steps down to the passage on the port side opposite. The steering wheel is located with all operating instruments, compass, chart case, controls, ship-to-shore telephone and wireless, if desired.

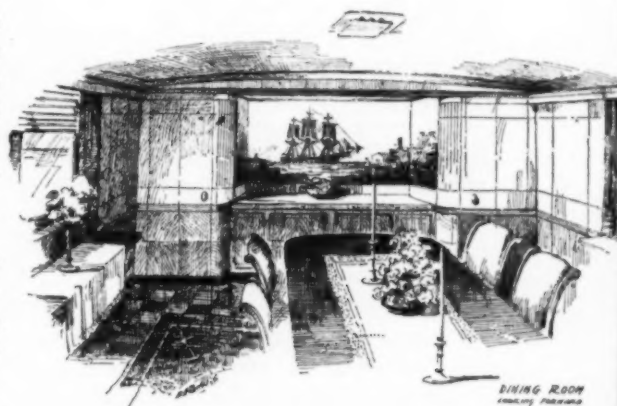
The dining room forward is reached by inside passage, and is approximately 16 ft. x 14 ft. with buffet, owner's glass and disk racks, serving shelf, dumbwaiter, lockers, and steps directly to the galley. Eight to ten people can be comfortably seated at dinner. Many other comfort and luxury features, in keeping with the best traditions of designer and builder, are visualized in this outstanding craft to ensure carefree, enjoyable hours afloat.



The salon, looking aft.



Owner's state room, looking forward.



Dining room, looking forward. Designer, John H. Wells, Inc.

LEGAL NEWS

Conducted by LEO T. PARKER*

BEWARE OF SALES TO CITY, COUNTY OR STATE

ALL persons and corporations selling Diesel engines to any public institution do so at their own risk. They must know that the one who makes the purchase is legally and lawfully authorized to do so.

For illustration, in *Missouri-Kansas Company v. Christian County*, 180 S. W. (2d) 735, it was disclosed that a company sued a county to recover payment of several hundred dollars for merchandise sold to the county. During the trial the county authorities contended that the county was not liable although the merchandise was received and used by the county. The testimony showed that a state law provides that valid contracts of this nature must be made by a majority of the judges of the county court.

The company proved that the contracts of purchase were signed by a county employe. Furthermore, the testimony indicated that the presiding judge had authorized the employe to make the purchases. Notwithstanding this testimony the higher court refused to hold the company entitled to recover payment for the merchandise purchased and used by the county.

GOVERNMENT vs. PROPRIETARY FUNCTIONS

Modern higher courts consistently hold that all municipalities have a dual corporate capacity, one as a governmental agency, and another as a proprietary institution with which the state at large has no immediate concern. Matters of police, health, and sanitation, and the like, are instances of the former; the operation of municipally owned electric power plants and similar public utilities are good examples of the latter. Generally speaking, municipalities which own and operate the latter kind of plants for a profit are subject to the same laws and regulations, as are all other persons and corporations engaged in business for profits.

For instance, in *City of Chanute v. State Revenue and Taxation*, 134 Pac. (2d) 672, reported May, it was shown that a state law provides that all property and assets of every description belonging to any city or municipal corporation shall be exempt from taxation. An-

* Attorney at Law, Cincinnati, Ohio

other state law provides that 2% tax shall be paid either as a sales tax, or a use tax, on all merchandise and equipment purchased and used.

A municipality owns and operates its light and water plants and a gas distributor system. To maintain these municipal utilities, it has been necessary for the city from time to time to purchase certain machinery and other equipment. Many such purchases have been made outside the state. Recently, the city purchased outside the state equipment, including Diesels, for the use of its utility plants to the amount of \$123,127.73. The question presented the court was: Is the municipality liable for payment of 2% sales or use tax on this equipment and amounting to \$2,937.86? In holding in the affirmative, the higher court said:

"The constitutional and statutory exemptions from taxation of all municipally owned property are clear and unequivocal. . . . The sales tax and the compensating use tax are not taxes imposed by assessment and taxation of property within the constitution nor under the general property taxation statutes. They are declared by the pertinent statute to be an excise tax to which the constitutional and statutory exemptions from taxation in favor of cities do not apply."

KINDS OF GUARANTEES

There are two classifications of guarantees: namely expressed and implied. An implied warranty exists where the buyer expressly, or by implication, makes known to the seller the particular purpose for which the goods are required and the testimony shows that the purchaser relies upon the skill and judgment of the seller to supply merchandise reasonably fit for such purpose.

However, no implied guarantee can arise when the seller gives an "expressed" verbal or written guarantee, and in order for a purchaser to win the suit he must prove that no expressed guarantee was given by the seller.

For instance, in *Citizens Fuel Company*, 168 S. W. (2d) 586, it was shown that a purchaser sued a seller to recover damages on an implied guarantee in the sale of a Diesel engine used in manufacturing ice. The counsel for the purchaser argued that the seller of the engine was

liable on an implied guarantee because the seller knew the purpose for which the engine was to be used; that it had superior knowledge concerning the engine which it manufactured and sold; that the buyer relied upon the superior knowledge and judgment of the seller as to the kind, nature and capacity of the engine; but that the engine would not perform the work for which it was purchased.

However, the testimony failed to prove that the seller had not given an expressed guarantee. Therefore, the higher court refused to hold the seller liable, and said:

"We have held that such an 'implied' warranty may be excluded by 'express' agreement between the parties."

On the other hand, if the purchaser relies upon the seller to supply merchandise reasonably fit for intended purposes, the seller is liable for breach of the implied warranty if he has not expressly guaranteed the merchandise.

See, the leading case of *Landers*, 139 Pac. (2d) 788, where the higher court held:

"Where the buyer, expressly or by implication, makes known to the seller that particular purpose for which the goods are required, and it appears that the buyer relies on the seller's skill or judgment there is an implied warranty that the goods shall be reasonably fit for such purposes."

MODERN EQUIPMENT REDUCES NOISE

Modern courts always endeavor to suggest plans by which property owners who object to noises, odors, vibration, etc. of factories may be reduced to a point where nearby property owners can have no legal objections to operations of such plants.

For example, in *Distasio v. Surrrette Storage Battery Company*, 54 N. E. (2d) 928, reported July, 1944, it was shown that a factory was constructed on or near the line of demarcation between an area devoted to industrial uses and an area devoted to residential uses. In the factory four Diesel engines are operated. Some of these engines and their generators are in operation all the time. About seventy-five % of the factory's product is for the army and navy. . . . And now please turn to page 86 . . .

EMERGENCY DIESEL-GENERATING UNITS

DIESEL generating units are being mounted upon welded steel sleds, or skids, at the Ohio subsidiary of Graham-Paige Motors Corporation, the Warren City Manufacturing Company. They are for the use of U. S. Army Engineers in supplying emergency current for civilian and military needs abroad.

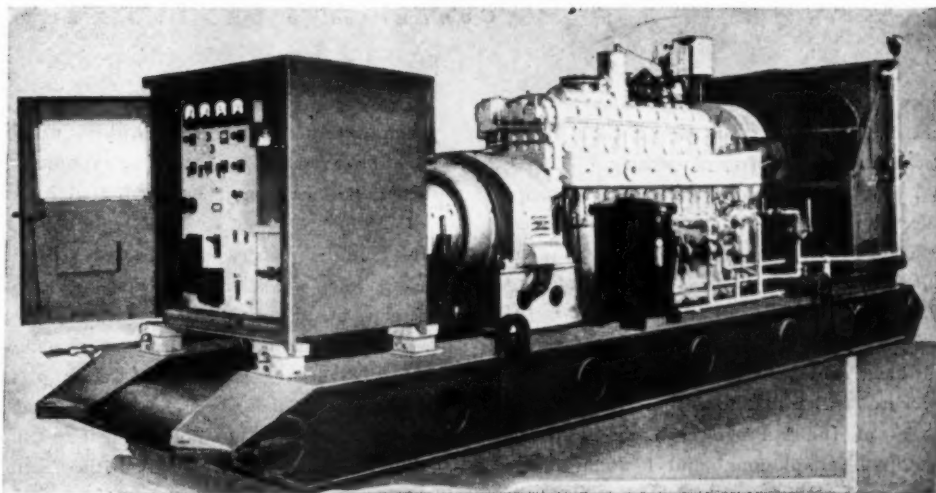
As the Nazi armies retreated in Europe, blowing up power stations, these generators were hauled into the areas and were put into immediate operation without the use of prepared bases. The generators serve as emergency "stop-gaps," cutting in on existing power lines to produce current for water supply, sewage disposal and illumination until regular power facilities can be restored.

The generating sets, originally intended for shipboard use, are being converted from salt-water to fresh-water cooling by the addition of radiators and fans. The units consist of a generator, external exciter, and switchboard. The engines are equipped with lube oil filters and purifiers, fuel oil filters, air cleaners and auxiliary air-compressor unit with an air receiver. The cooling system consists of a two-unit radiator with a motor driven fan and an expansion tank. The switchboard, on a steel framework, includes a circuit breaker, field switch and rheostat, voltage regulator, voltmeter, ammeter, powerfactor meter, and frequency meter.

The generating units are of 241 to 590 horsepower and are of three types: opposed-piston, V-type, and in-line, with ratings of from 167 to 418 kw. They are produced by Fairbanks-Morse and the Cleveland Diesel Division of General Motors.

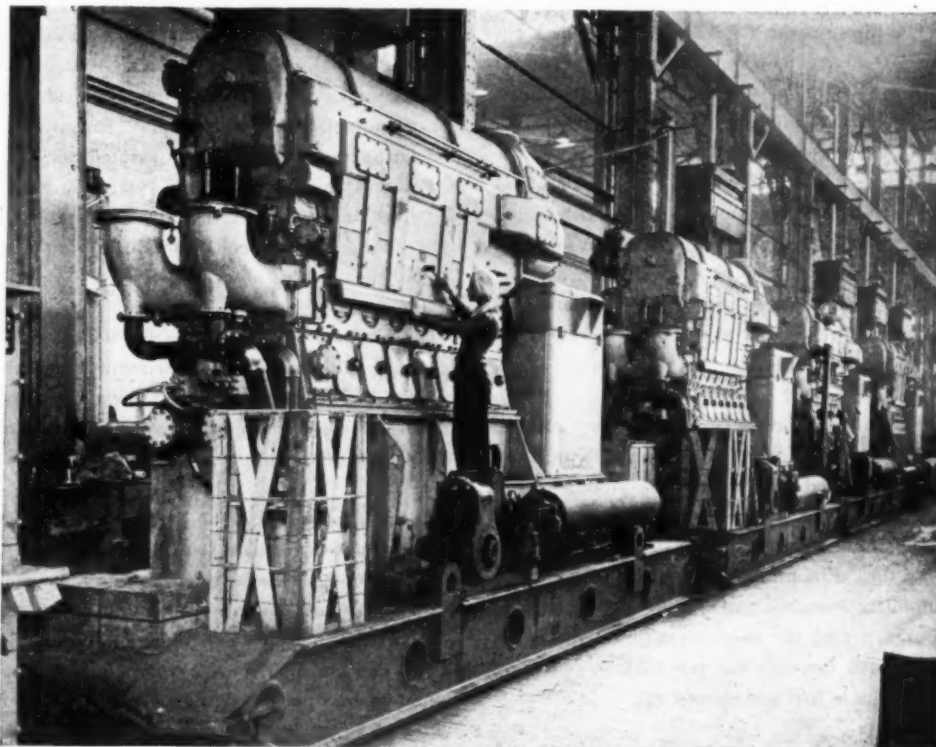
The welded steel skids consist of two I-beam longitudinal members, joined by six reinforcing laterals of tubing. The use of this type of portable Diesel generating plant is seen as a postwar possibility serving as a disaster combat unit supplying emergency current in American communities hit by fires, floods or earthquakes.

Power units similar to those now supplying current in war-torn areas abroad could be effectively spotted throughout this country ready to be dispatched immediately to stricken cities.



Skid-mounted generating unit with General Motors 8-268A Diesel.

Portable generating units with Fairbanks-Morse opposed piston Diesels.



One or more of the units might be located in each state, with trained crews on call for transporting and operating them.

Joseph W. Frazer, Graham Paige chairman, speaking of these units, says: "When disaster

strikes, immediate power is vital to the work of hospitals, relief stations and rescue crews. Many lives can be saved if emergency power plants reach the scene promptly, maintaining water supply, sewage disposal, and providing necessary illumination and other important services."

SUPERVISING & OPERATING ENGINEERS' SECTION

"CRANKCASE EXPLOSIONS"

Conducted by R. L. GREGORY*

THE following is an excerpt taken from a letter to this department, written by Mr. C. W. Jennings, Chief Engineer of the Municipal Electric and Water Power Plant, of Marshall, Michigan. Mr. Jennings has contributed several interesting items to this section of Diesel Progress. His statement reads as follows:

"I have read with considerable interest, the various articles that have appeared in recent issues of Diesel Progress on the subject of 'Crankcase Explosions,' and I would like to cite an experience which we encountered, which, had the trouble not been detected and corrected, might have resulted in a crankcase explosion.

"The unit on which this incident occurred was a 1500 hp., two-cycle, air injection, crosshead type of job. The first indication of any trouble occurred with the appearance of considerable smoke in the exhaust. Clearances between the fuel valves and rocker arms were checked and found to be at the proper setting. Other conditions which might be causing the trouble, in the way of adjustments, fuel valve settings and pumps were checked and while this was being done, several sharp detonations occurred in number 4 cylinder.

"The unit was immediately shut down and the fuel valve and casing on number 4 cylinder were removed. We found the atomizer completely packed with carbon residue and damaged from heat, the needle fuel valve warped and the casing blue from excessive heat. A new atomizer assembly and needle fuel valve were installed and the necessary adjustments made, but when the unit was put back in operation the trouble had not cleared up.

"Further investigation finally proved that the locknut at the lower end of the pull rod had become loosened, causing the above trouble.

"Proper adjustments were made and the trouble disappeared, but I am convinced that had

* Chief Engineer, Municipal Water and Light Plant, Hillsdale, Michigan.

prompt measures not been taken this condition might have resulted in a crankcase explosion, as the detonations in number 4 indicated."

Mr. Jennings' experience as stated above, is just another proof, that in Diesel operation, there are many causes which may lead to crankcase explosions. Undoubtedly from the above statement, the rings in number 4 were in pretty fair shape and there must have been a small amount of blowby, but not sufficient to cause excessive heat in the crank case, or the mixture of gases was such that there was a dampening effect taking place, rather, than the proper mixture to induce heavier detonations.

In carrying on maintenance work, we are often prone to ignore conditions which should be periodically investigated, and that is especially true under present operating conditions. I make this statement as a general fact, since this department is personally acquainted with Mr. Jennings and knows that he carries on a well defined and definite maintenance program, hence the above statement has no bearing upon this particular incident.

But many engineers assume the attitude that as long as their units are functioning smoothly, it is not necessary to make investigations of parts of the equipment. Nevertheless the unexpected often happens.

As an example of the above let the writer explain another incident which bears this statement out. It is almost impossible to remove all the sludge and foreign elements in fuel oil, to the extent that they will totally disappear from fuel entering fuel lines to your units. Even if half of one percent gets by the filters or centrifuge or whatever device you may have for clarifying your fuel, that one half of one percent will accumulate in the fuel lines, and in many instances will lodge in some elbow, tee or other fitting. After a certain amount of this accumulates at a given spot, it may let go all of a sudden, and clog up some smaller opening, pass into a check valve, or lodge in a needle valve.

This is particularly true in fuel lines which have an excess of fittings which systems could be simplified if studied and these bottle necks which we spoke of in a former article eliminated. The writer has even found this sludge accumulating in fuel meters. Pipe lines would be clean and free, but this small amount of carryover of sludge would lodge in a small opening and eventually cause trouble.

The port holes in an atomizer would be an ideal place for such an accumulation, and once this starts, imperfect combustion results, and excessive heat carbonizes the residue that has lodged therein. Then the trouble appears. Therefore while you may feel that your fuel lines are free from foreign materials, your atomizers working satisfactorily, check valves and fuel pump parts functioning properly, it is good insurance to investigate them once in a while and make sure that they are in proper working order. You cannot give your equipment too much attention.

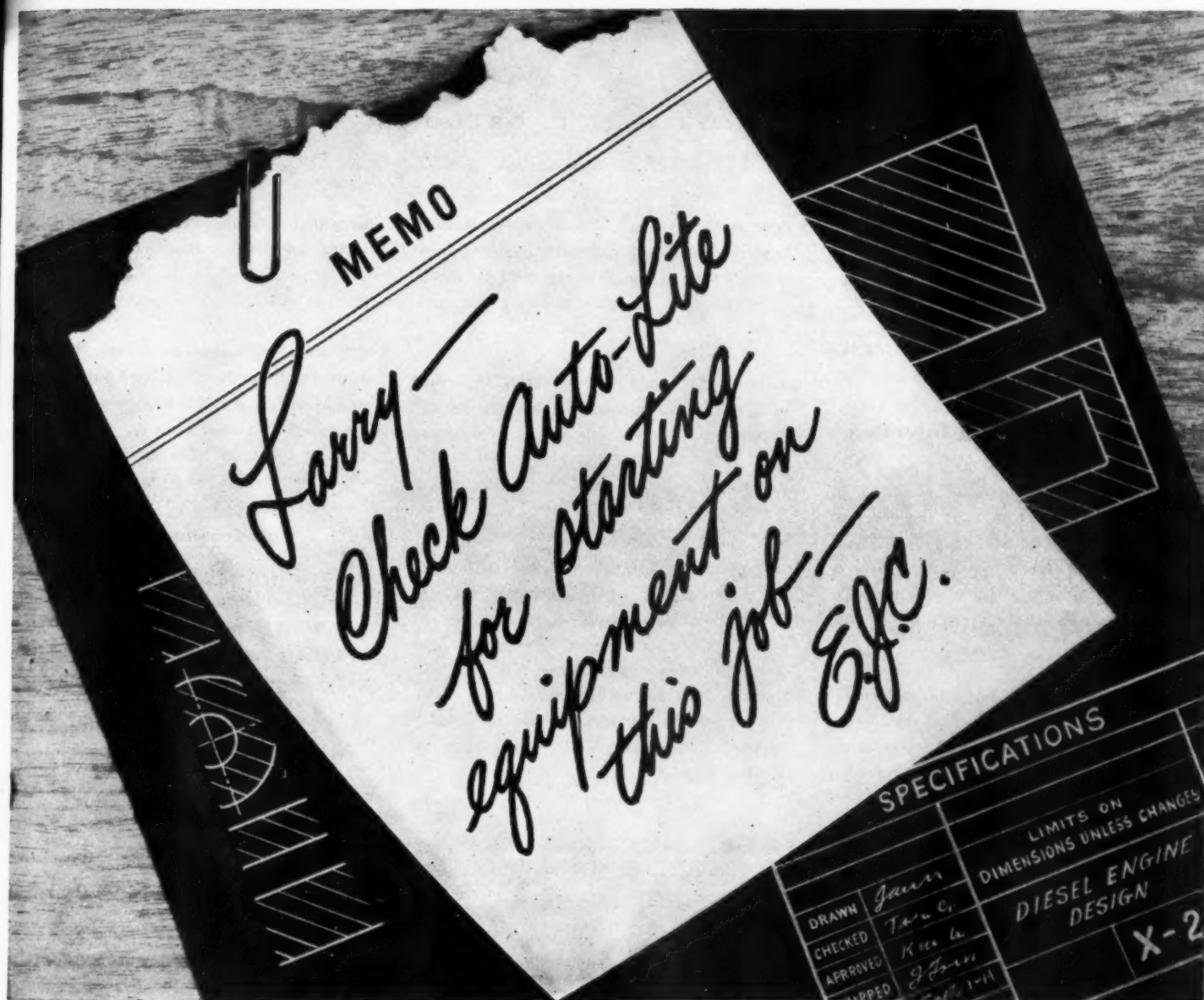
Lube Field Tests

THE well known axiom "the proof of the pudding is in the eating" applies only too well to the lubricating oils developed today in the oil refiner's modern research laboratory. Regardless of how satisfactorily the oil performed in the laboratory or in engine tests, the true ability of the product is determined from its performance in the equipment of the everyday user. Although laboratory engine tests are rightfully designed to subject the oil to the extremes of service severity, there are conditions of service which make heavy demands on the oil and which are not duplicable in the laboratory. It is primarily these operating conditions under which the oil refiner prefers to see his lubricant field tested. Field tests of newly developed engine lubricating oils are usually conducted in gasoline and Diesel engines operating in widely varying services including bus, truck, tractor, marine, stationary, and railroad. From The Texas Company Publication, "Lubrication."

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TUNE IN "EVERYTHING FOR THE BOYS" — STARRING DICK HAYMES — TUESDAY NIGHT — NBC NETWORK

Exchange Your Diesel Maintenance Ideas

Conducted by R. L. GREGORY

Editor's Note: In this department we provide a meeting place where Diesel and Gas engine operators may exchange mutually helpful maintenance experiences to keep our engines in top condition. Mr. Gregory edits your material and adds constructive suggestions from his own wide experience. This is your department—mail your contributions direct to DIESEL PROGRESS.

An Idea for Servicing Injection Valves

THE sketch shown herewith illustrates a simple method which we use in servicing water-cooled injection valves. In servicing this type of valve it is usually necessary to tap or force the valve body down into the sleeve, far enough to enable one to start the upper nuts on the test stand studs.

Forcing the valve body down in the sleeve in this manner, generally dislocated the copper gasket which fits in a recess at the bottom of the inside of the sleeve, since the gasket does not fit this recess snugly. A slight jar would

cause it to jump out of place, so we decided to place a cork stopper of the proper dimension in the bottom of the sleeve and hold the gasket in central position, while inserting the valve body.

After the valve body is tapped down far enough to start the top nuts on the studs, it can be drawn into place by tightening down on the nuts, and as it comes into place, the valve tip pushes the cork out, and the copper gasket remains in place.

Of course there are other methods of holding the gasket in proper place, such as cementing, or installing longer studs for the ones on the test stand, but this method is so simple, that it has proved very satisfactory and saves considerable time and work. In addition to centering the gasket, the cork method also proves invaluable in holding a cleaning solution in the bottom of the sleeve, when you desire to remove carbon or scale which often accumu-

lates at the bottom of the sleeve, and there are several solutions used, which will dissolve this carbon or scale if the sleeve is filled with one of them and allowed to stand for a time.

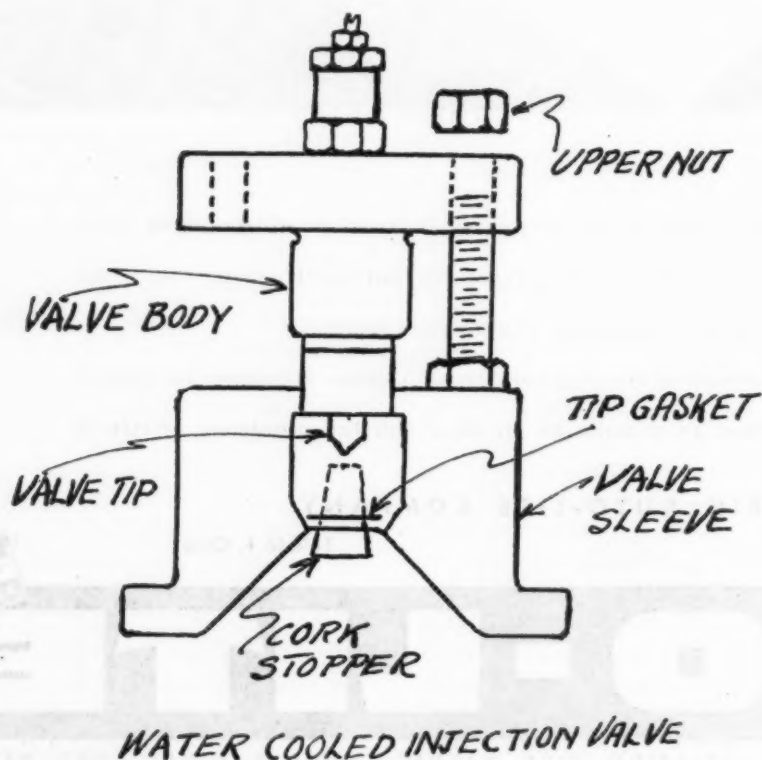
The foregoing suggestion was sent in by L. I. Laurent of the New Roads, Louisiana, Light and Water plant and is being passed on to our readers. Such simple tricks as herein illustrated do save time and labor and are the type of things our readers like to know about.

Lubricator Indicator

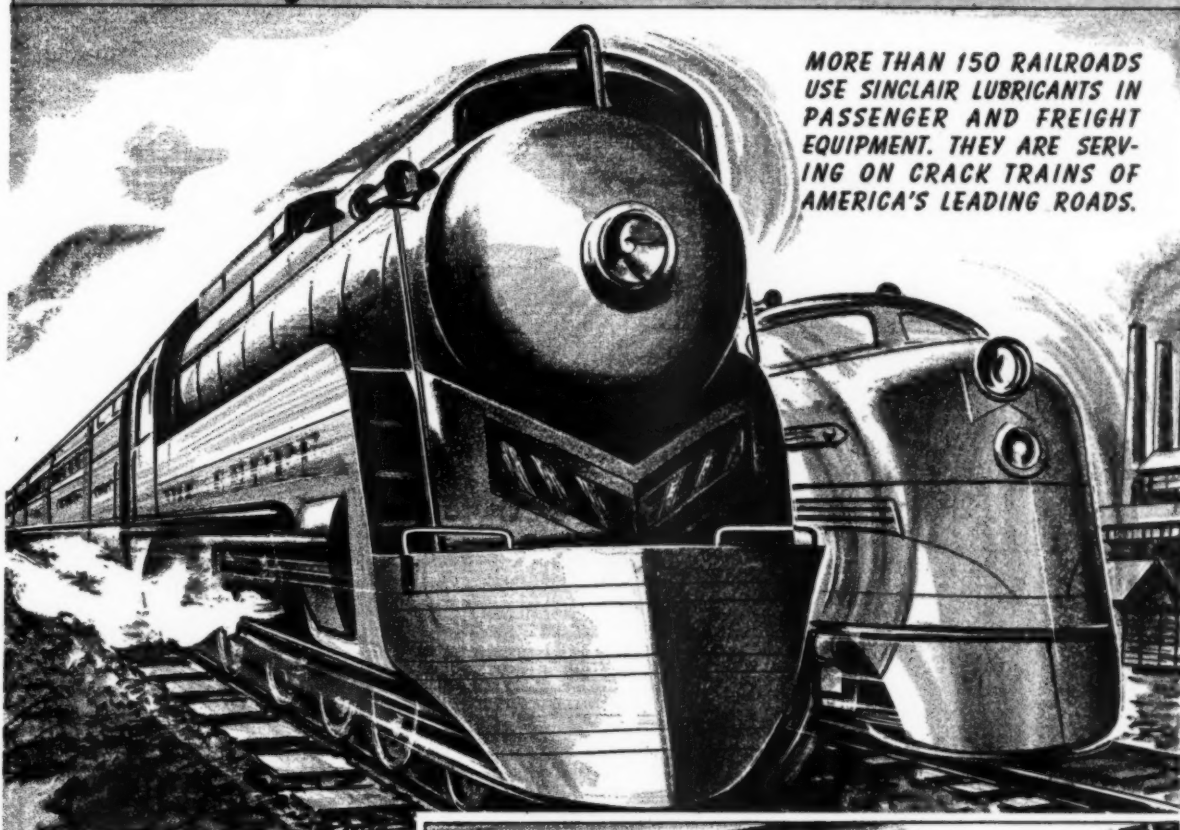
THE following idea has also been sent in by Mr. Laurent of the New Roads, La., Light and Water plant and is one which he has adopted to enable the operators to keep closer check on the operation of the lubricators on the various units between inspection rounds. Secure a piece of sheet brass anywhere from .030 in. to .060 in. in thickness and from this cut out a 3 in. square. In the center of this square drill a hole just large enough to allow the square to be slipped over the hand crank end of the lubricator shaft.

On one side of the brass sheet, solder a brass hose clamp in such a manner that in tightening the clamp up with the screw, it will bind the shaft tightly and hold the brass square in place on the shaft. When the lubricator is in operation, the square of sheet brass has a sort of intermittent rotary motion, caused by the lubricator ratchet drive, which motion can be noticed from any position in the room where the lubricator can be seen. When this motion is discernible it indicates that mechanically, the lubricator is functioning.

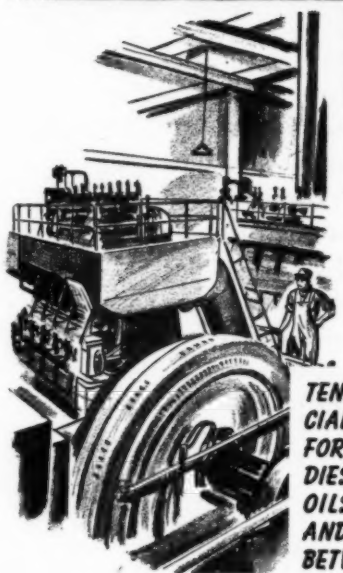
Should it be noted that this peculiar rotary motion of the brass square has ceased, it is an indication that there is either trouble with the drive or the driven parts. Installation of this indicator is not intended to eliminate the routine inspection of the sight feed lubricators but rather to supplement it, in that the operator can see this operation from various positions while doing other duties. Although designed to fit the type of lubricators on our units, the idea can be applied to most any style of sight feed lubricator having an extended lubricator shaft for the hand crank.



Do you know that...



MORE THAN 150 RAILROADS USE SINCLAIR LUBRICANTS IN PASSENGER AND FREIGHT EQUIPMENT. THEY ARE SERVING ON CRACK TRAINS OF AMERICA'S LEADING ROADS.



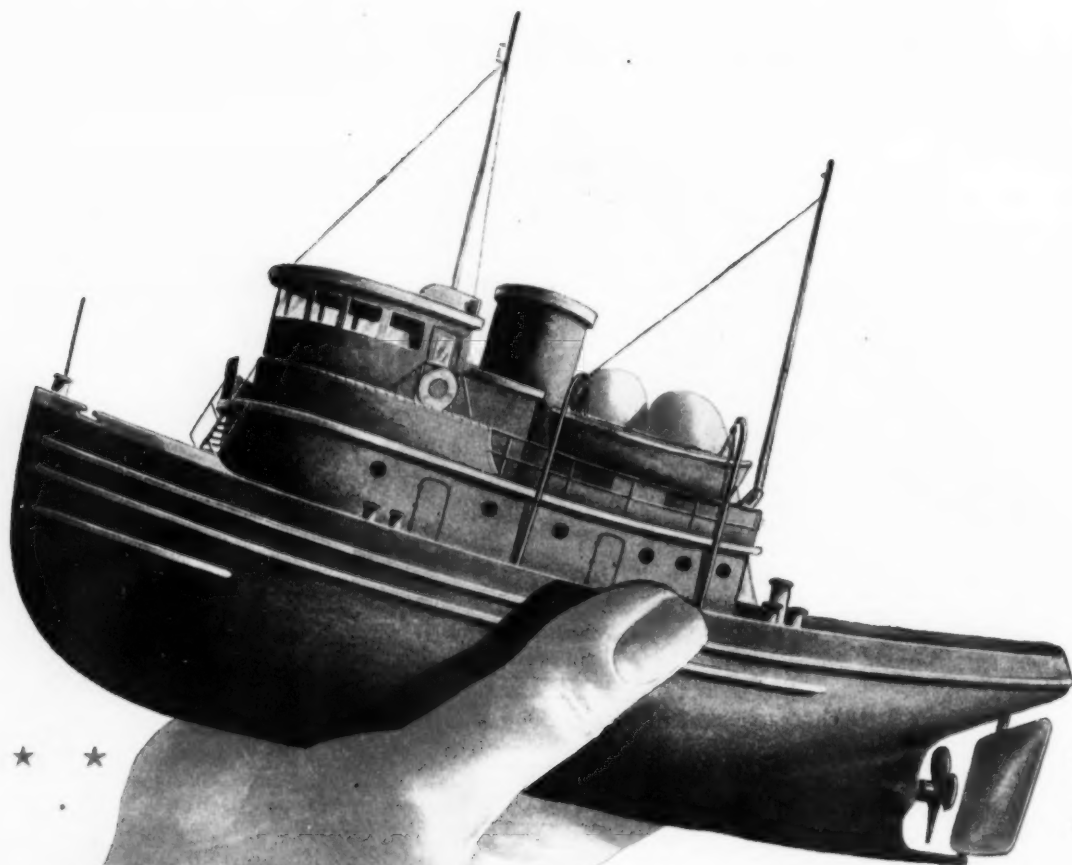
TEN-OL IS ONE OF THE SPECIALLY PREPARED SINCLAIR OILS FOR IMPROVED LUBRICATION OF DIESELS. RUBILENE AND GASCON OILS INSURE CLEAN ENGINES AND LONGER SERVICE PERIODS BETWEEN OVERHAULS.



CHICAGO AND SOUTHERN AIR LINES WHICH HAS INAUGURATED AN ADDITIONAL DETROIT-HOUSTON-NEW ORLEANS DAILY SERVICE WITH NINE INTER-CITY SCHEDULED STOPS HAS FLOWN ITS FLEET OF DIXIELINERS MORE THAN 18,600,000 REVENUE MILES ON SINCLAIR PENNSYLVANIA MOTOR OIL.

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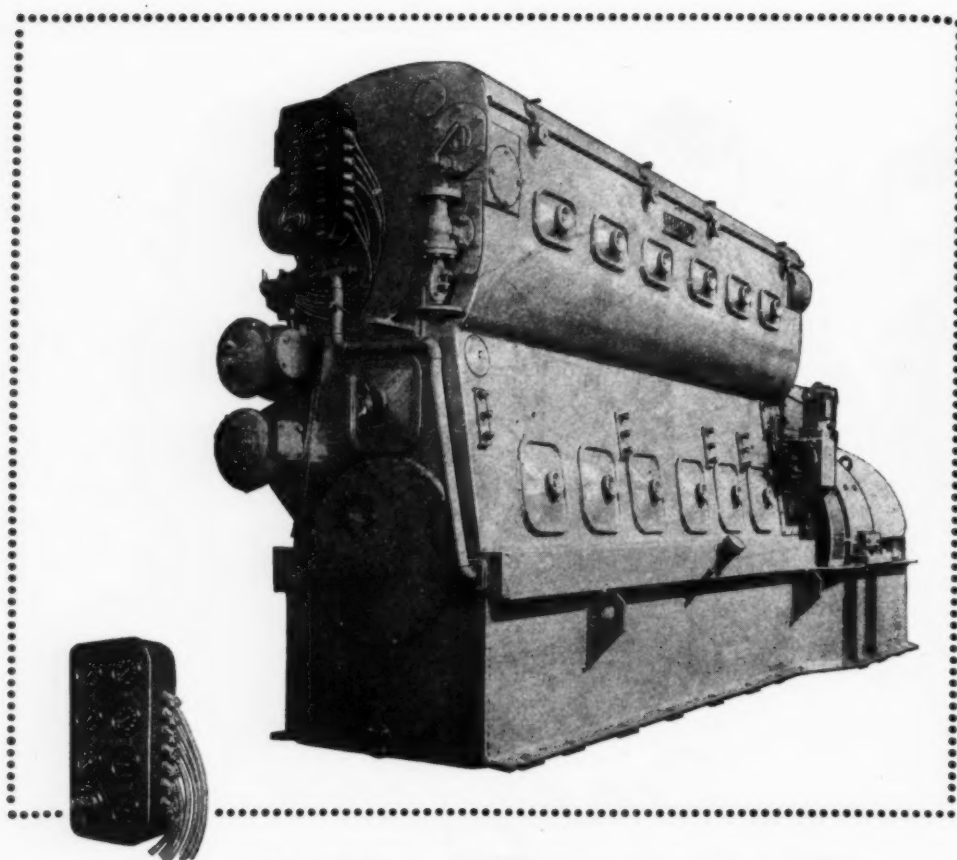
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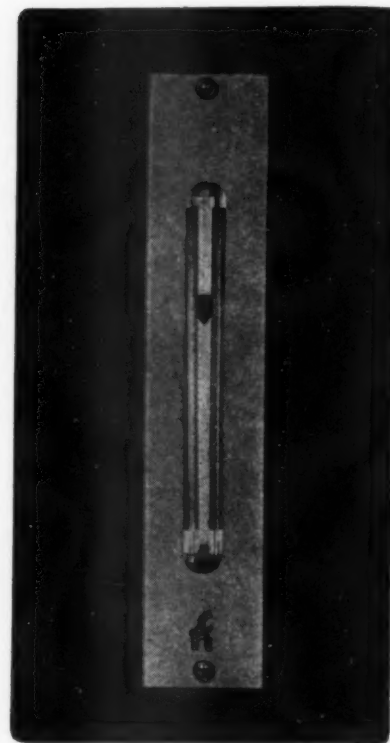
**Hendy auxiliary power units
are equipped with**

***Alnor* Pyrometers**

A familiar sight on the instrument panel of modern Diesel equipment is the Alnor Exhaust Pyrometer. These 250 kw. Diesel generator sets built by Joshua Hendy Iron Works are no exception. Two of these units are used in Maritime Commission Type C1-M-AV1 Cargo Ships, providing auxiliary power, and are equipped with Alnor Pyrometers. Dependable exhaust temperature indications provided by the Alnor Pyrometers afford a reliable check on proper loading and efficient performance of the engine. Afloat or ashore, you will find Alnor Pyrometers rendering unfailing service with Diesel and gas engines of many types. Write for Alnor Pyrometer bulletins with complete data.

ILLINOIS TESTING LABORATORIES, INC.
420 North La Salle Street
Chicago 10, Illinois

New Panel-Mounted Rotameter



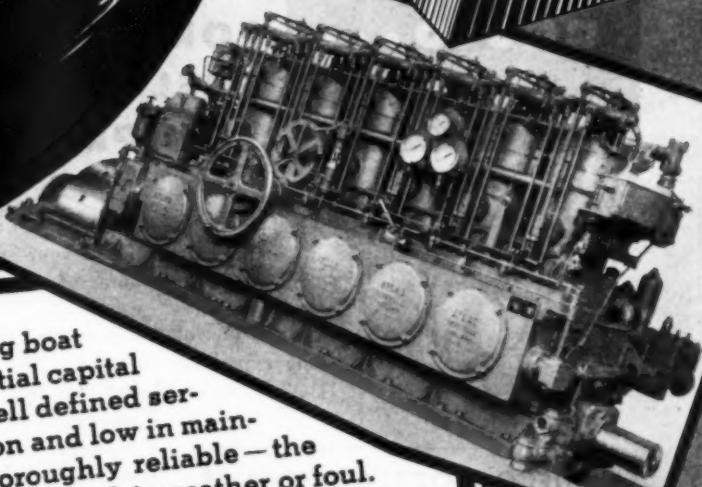
DESIGNED to answer the growing need for panel centralization of instruments that indicate pressure, flow, temperature, etc., the new Schutte & Koerting panel-mounted Rotameter offers several advantages. Although the instrument itself is basically the S-K Universal Rotameter, the panel-mount has a frosted glass window with a central clear-glass aperture and is installed flush in the panelboard, with the Rotameter supported directly behind. Provision is made for adequate backlighting and ready maintenance accessibility.

New Plant for Delco-Remy

ANNOUNCEMENT that a 27-acre tract of land has been purchased in New Brunswick, N. J., by the Delco-Remy Division of General Motors as a site for a new modern storage battery manufacturing plant, to be built as soon as government regulations will permit, was recently made by O. V. Badgley, general manager of the division, at the concern's home office in Anderson, Ind.

Building and operation of the new plant will be under the direction of B. A. Dollens, manager of Delco-Remy battery operations. The plant's facilities will be devoted entirely to the production of Delco batteries for passenger cars, trucks, tractors and buses. The unit is planned as a postwar operation and will supplement the production facilities of the division's battery plant at Muncie, Ind.

THE DIESEL FOR THE *LONG PULL*



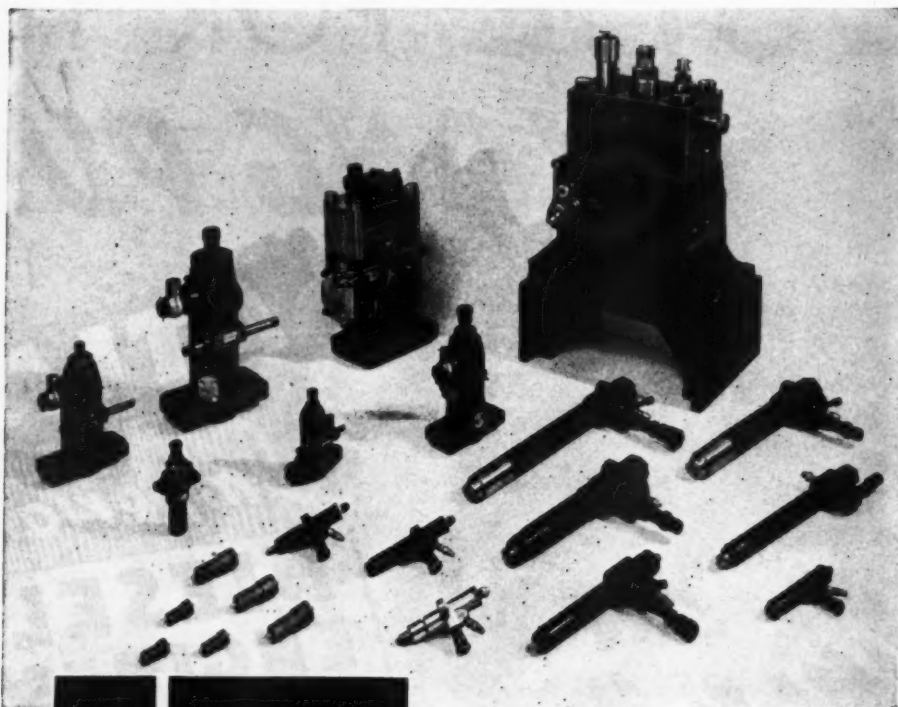
● When you select a Diesel engine for a tug boat or a fishing craft you are making a substantial capital investment. The engine must perform a well defined service—it should be economical in operation and low in maintenance cost. Above all, it should be thoroughly reliable—the kind that will take you there and get you back in fair weather or foul.

When you buy an ATLAS DIESEL for a work boat or a fishing craft, you are making an investment "for the long pull." You are getting an engine that you can live with and profit with for many years to come. It's the kind that you can work as many hours as you wish without pampering or petting—always ready to go when you are.

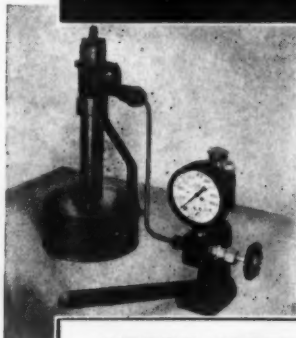
The characteristics of Atlas Diesels are not accidental. They are determined strictly by design and experience. Heavy duty construction and slow speed operation just naturally add up to reliable performance, a low rate of wear and tear, and consequent long life. If those are the things you want in a Diesel, specify an Atlas, for Atlas Diesels are planned and built to give those results.

ATLAS IMPERIAL DIESEL ENGINE CO.

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Whether you need standard fuel injection equipment or special units built to your specifications, Adeco offers the logical source of supply.

Today's line of Adeco equipment, the outgrowth of long experience in serving the Diesel industry, includes: Standard fuel injection pumps in plunger diameters from 7 mm. to 31 mm.; a complete line of standard nozzles and nozzle holders, including the water-cooled type; and the Adeco nozzle tester.

All Adeco products are built to highest standards, with years of trouble-free operation behind them to testify to their reliability.



Legal News, continued from page 74

The lower court decided that the noise, especially during warm weather when people keep their windows open, is "offensive, discomforting, annoying and harmful to ordinary persons." However, this court also held that if the factory corporation would provide equipment to suck air into the engine room the noise will be greatly reduced, and that the odors, the smoke and the vibration, although disquieting, would not be sufficiently offensive and harmful to entitle the properly owner to damages or to an injunction.

In other words, the lower court held that the factory corporation could by installation of suitable equipment reduce the alleged nuisance and adjoining property owners could neither object, obtain damages, nor stop operation of the plant. The higher court upheld this verdict.

LAW OF NEGOTIABLE NOTES

It is well known that a non-negotiable note is not salable or transferrable. Now, considerable litigation has arisen between the holders of negotiable notes, and purchasers of Diesel engines for which such notes are given, whether the notes are valid if the engine proves unsatisfactory to the purchaser, or the seller breaches a warranty or guarantee of the quality of the engine.

Obviously, a purchaser cannot be compelled to pay the seller where the testimony proves that the latter breached his guarantee, yet this rule of law is not always applicable when a person holds a negotiable note purchased from the seller, to whom the purchaser gave the note as payment for the engine. In other words, modern higher courts consistently hold that the law "writes into" a negotiable note the maker's unconditional promise to pay the note to any indorsee in good faith for value before maturity whatever may happen as between original parties to the transaction.

For illustration, in *Cotton*, 18 So. (2d) 227, reported August, 1944, it was shown that a seller sold an engine to a purchaser who gave his negotiable note to the seller in full payment for the engine. The seller of the engine sold the notes to a corporation. When the notes became due the purchaser refused payment on the grounds that the seller of the engine had breached a warranty of the quality and efficiency of the engine. Then the corporation sued the purchaser. In holding the purchaser fully liable on the notes, this higher court stated important law, as follows:

... And now please turn to page 88 ...

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Introducing a new compass for small vessels

HERE at last is a navigation instrument for vessels requiring something better than a magnetic compass . . . vessels where space, weight, and power limitations make it impracticable to use the Gyro-Compass.

Sperry announces the Gyro-Magnetic Compass, designed particularly for small craft: fishing boats, seagoing tugs, towboats, barges, work boats, yachts, and ferries.

The Sperry Gyro-Magnetic Compass is a remotely located magnetic compass from which gyro-stabilized indications are transmitted to conveniently located repeaters.

The magnetic compass unit can be located where magnetic disturbances are at a minimum. This solves many of the serious deviation difficulties inherent in the magnetic compass.

Also, its gyro-stabilized indications

as shown on the repeater compass are steady . . . regardless of the vessel's rolling and pitching.

The Gyro-Magnetic Compass can, in addition, be used to control automatic steering.

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TEMPERATURE READINGS
AS HIGH AS 1000°F**

WESTON *All Metal* THERMOMETERS *are stable and rugged over wide temperature ranges*

Here are advantages of Weston All-Metal Industrial Thermometers that provide long-term dependability for Diesel engine applications and for industrial heat control.

- WESTON all-metal temperature element has proved its stability throughout the years.
- Rugged all-metal construction resists vibration, shock and other mechanical abuse.
- Large gauge-type scales permit accurate readings even from a distance.



Weston All-Metal Industrial Thermometers are available in types and sizes for most applications, with stem lengths from 2½" to 48". Ranges + 1000° F to - 100° F. Literature sent on request... Weston Electrical Instrument Corporation, 579 Frelinghuysen Avenue, Newark 5, New Jersey.

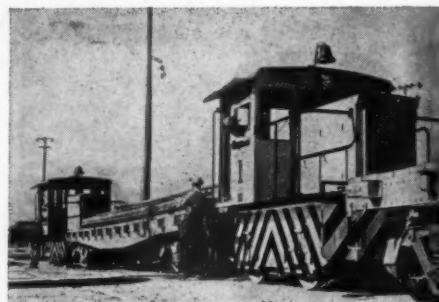
Weston *All Metal* THERMOMETERS

Legal News, continued from page 86

"The indorsee (purchaser), for value before maturity, of a negotiable promissory note is protected as a holder in due course from the defense of breach of executory warranty unless at the time he acquired the note the condition had then been breached and he had knowledge thereof or was possessed of facts sufficient to impute knowledge, or unless he had 'knowledge of such facts that his action in taking the instrument amounted to bad faith.'"

Other higher courts have held that (1) knowledge by a purchaser of a note that the note was given in consideration of an executory agreement; or (2) that it was given for the sale of an engine warranted or guaranteed by the seller; (3) that the consideration was future and contingent, does not deprive the holder of his character as a holder in due course, although the seller fails to perform the contract, or the guarantee is breached, providing the holder had no knowledge of the nonperformance or the breach prior to his acquisition of the instrument.

G-E 25-Tonners at Marinship



This pair of 25-ton G-E Diesel-electric switchers hustles material around the busy Marinship yard at Sausalito, California on a night-and-day basis with only two days off per month for maintenance and inspection. The husky little switchers can handle from one to ten cars at a time. Marinship reports they have an availability of 97.7 per cent; require only ten minutes three times weekly for refueling.

Petroleum Research Announces New Abstract Service

A NEW Abstract Service in regard to the latest developments in Petroleum Research pertaining to all kinds of Fuels, Lubricating oils and greases as used in Aircraft, Automobiles and Diesel engines is now being published, semi-monthly by the "Petroleum Research Abstracts on Fuels and Lubricants," 30 W. Washington St., Chicago 2, Ill. Such a technical service and up to the minute reference guide should be of great benefit to those interested.

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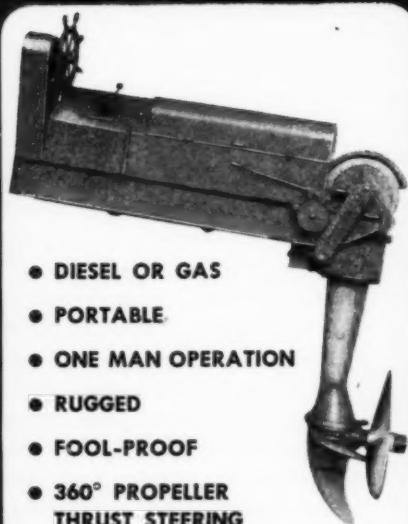
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ROGRESS

THIS IS THE HARBORMASTER!

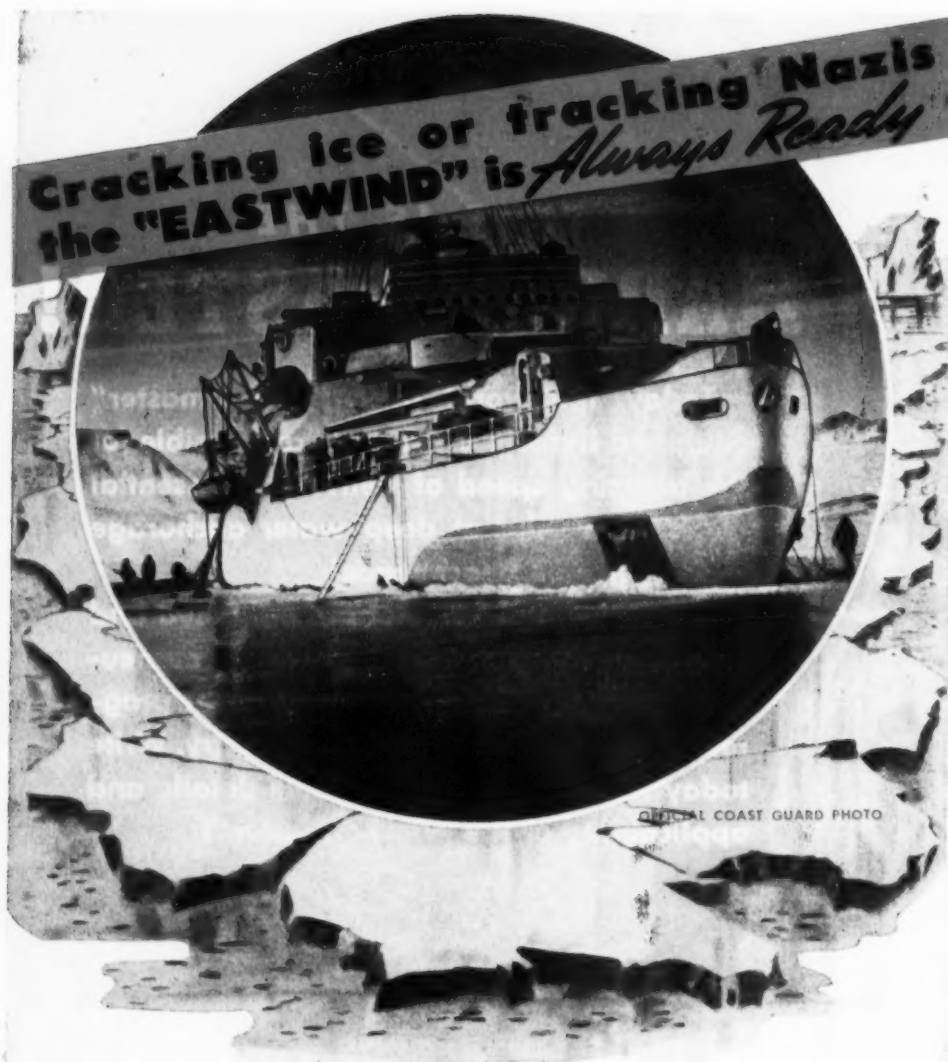
Today, the world over, "Harbormaster" equipped lighters are directly responsible for the amazing speed of delivery of essential cargo from ships at deep-water anchorage to the invasion beachheads!

Tomorrow, lighters that are propelled and steered by these powerful, extremely maneuverable units will greatly accelerate the progress of the post-war marine industry. Write today for your copy of complete details and applicability of the "Harbormaster"!



- DIESEL OR GAS
- PORTABLE
- ONE MAN OPERATION
- RUGGED
- FOOL-PROOF
- 360° PROPELLER THRUST STEERING





WHEN THE COAST GUARD CUTTERS EASTWIND AND SOUTHWIND, aided by a small task force, broke up a determined Nazi effort to establish a fortified base only a few hundred miles from the North Pole, the prudence of the Coast Guard motto—"Always Ready"—was demonstrated.

The chase . . . the battle . . . the capture of the enemy force . . . the towing of crippled ships as many as 3,000 miles . . . all were made possible by the combination of hardy men, good ships and dependable engines . . . able to operate efficiently thousands of miles from base, for long periods of time without major attention.

The dependability of the engines in every cutter in the task force engaged in this vital operation was enhanced by the Briggs Oil Clarifiers installed on all main and auxiliary Diesel engines . . . they were ready to go at a moment's notice.

Afloat and on land, Briggs Oil Clarifiers add to the dependability, efficiency and economical operation of every size and type internal combustion engine. For the complete Briggs story, consult your classified telephone directory under the "Filter" section to find the Briggs distributor nearest you or write direct to manufacturer.

If you have a filtration problem--see Briggs first!



BRIGGS CLARIFIER CO.

Briggs

PIONEERS IN MODERN
OIL FILTRATION

Washington 7, D. C.

C. G. Cox Joins Hendy Executives

THE appointment of C. G. Cox to the executive staff of the Joshua Hendy Iron Works is announced by A. A. Browne, manager of engineering and sales. Cox will serve as administrative assistant to Browne, aiding in the formulation and execution of company sales and engineering policies. He will make his headquarters at Sunnyvale, California.



C. G. Cox

Cox was formerly vice-president and general manager of the Enterprise Engine and Foundry Company of San Francisco, where he has also served as sales manager.

Van der Horst Offers Licenses for Porous Chrome and Hard Chrome Plating

FOR some time Van der Horst has been quietly serving some manufacturers in setting up Porous-Krome processing operations in their own plants. They are now ready to offer this service generally to manufacturers, particularly, of course, the Diesel and gasoline motor manufacturers and liner manufacturers. The service that they offer is complete and covers everything from the inception of the idea to the plan in operation, or any portion of this service.

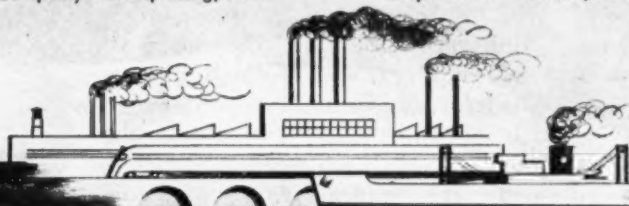
Inasmuch as Van der Horst Corporation has basic patents covering the application of porous chromium, the licensing of manufacturers to use this process is necessarily a part of the program which Van der Horst is now announcing. However, in addition to the services as applying to porous chromium plating, Van der Horst is also in position to offer similar services of design, plant layout, installation and operating instructions on dense hard chrome plating, particularly in those applications outside of the decorative chrome field and in those applications where a heavy deposit of chromium is required.

Backing Your Judgment...

LEADERS IN DIESEL ENGINE MANUFACTURE

Baldwin Locomotive Works—Philadelphia, Pa.
 Buckeye Machine Company—Lima, Ohio
 Chicago Pneumatic Tool Co.—Franklin, Pa.
 Clark Bros. Co., Inc.—Olean, N. Y.
 Enterprise Engine & Foundry Co.—
 San Francisco, Calif.
 Ingersoll-Rand Company—Phillipsburg, N. J.

Joshua Hendy Iron Works—Sunnyvale, Calif.
 National Supply Co.—Springfield, Ohio
 Page Engineering Co.—Chicago, Ill.
 Sterling Engine Co.—Buffalo, N. Y.
 Washington Iron Works—Seattle, Wash.
 Worthington Pump & Machinery
 Corporation—Buffalo, N. Y.



... when you specify **BENDIX-SCINTILLA** Fuel Injection Equipment

Put to the test on land and sea by the leading manufacturers of Diesel engines, Bendix-Scintilla Fuel Injection Equipment has proven thoroughly dependable and economical.

Of sound design—finest quality materials and manufactured to our rigid standards of precision and workmanship, Bendix-Scintilla Fuel Injection Pumps and Nozzles will give you many years of continuous reliable service. In every respect they are worthy of the names they bear. Bendix—First in creative engineering . . . Scintilla—World famous for craftsmanship.

We invite your further interest in these products as well as the new Unit Injectors, recently developed for *NEW* Diesel engine designs. Information on request.

BENDIX AND SCINTILLA ARE TRADE-MARKS OF BENDIX AVIATION CORPORATION

SCINTILLA MAGNETO

DIVISION OF

Bendix

AVIATION
 CORPORATION
 SIDNEY, N.Y.

FUEL INJECTION PUMPS

The simple design and precision manufacture of these pumps assure dependable engine performance. Supplied for a wide range of engines.



NOZZLE HOLDER ASSEMBLIES

Supplied in a variety of lengths, with separate spray tips. Also liquid-cooled units interchangeable with uncooled units.

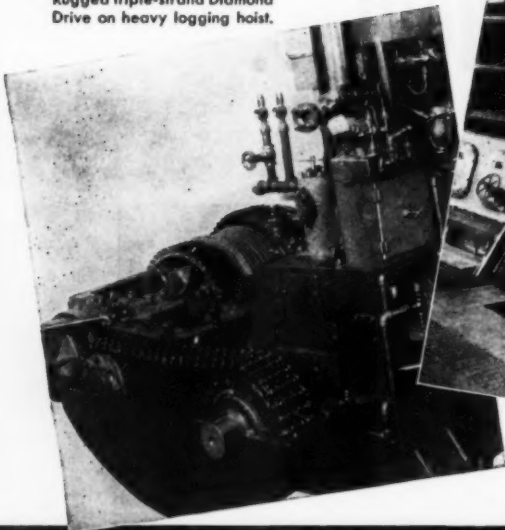
BENDIX-SCINTILLA UNIT INJECTORS

A fuel injection pump and nozzle assembly combines in a single unit—the Unit Injector—eliminates long high pressure fuel lines and any possibility of uneven timing.



As Effective for Power Take-off Service

Rugged triple-strand Diamond Drive on heavy logging hoist.



Diamond Chain Drive to exciter (in enclosing case).

As for Timing Drive Applications

Engine builders and operators the world over know the enduring accuracy, high efficiency and adaptability of DIAMOND Roller Chain timing drives and such direct engine applications as for the driving of lube oil and water pumps, tachometers, fuel supply pumps, blowers and governors. Leading engines are equipped with Diamond Drives.

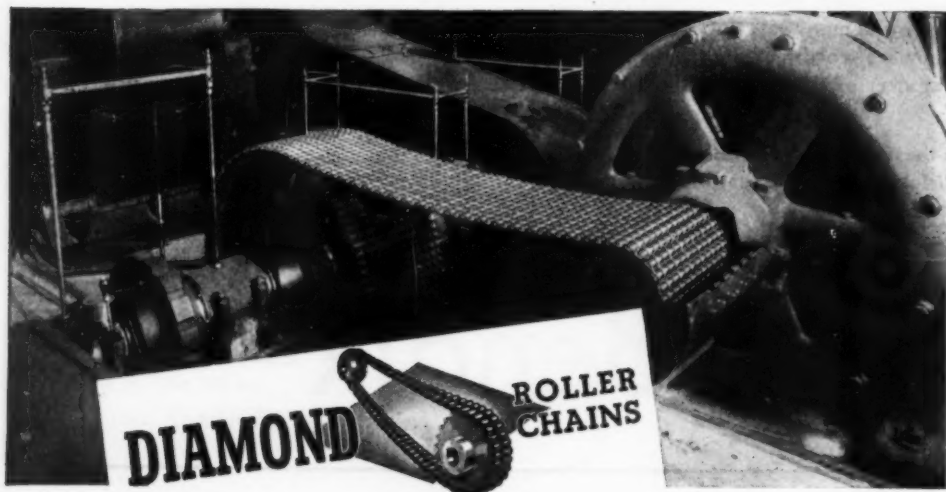
The characteristics of smoothness, great power transmitting efficiency, long life and positiveness are equally effective for all manner of power take-off applications—for generators, exciters, compressors, pumps, hoists, oil field rigs, construction machinery.

The durability of DIAMOND Roller Chains is such that on many applica-

tions, provision for chain take-up is not required, and center distances therefore can be fixed. Load distribution is among many sprocket teeth, and machine bearings are subjected to no excess loading from separating force as with gears, nor from initial tension as with belts.

For engine applications, or for power take-off, Diamond Chain engineers can help save your time with practical suggestions. Also our general Catalog 617 will be mailed on request. DIAMOND CHAIN & MFG. CO., 407 Kentucky Avenue, Indianapolis 7, Indiana. Offices and Distributors in All Principal Cities.

160 KW generator driven by 4-cylinder 500-H.P. Diesel engine in pipeline station. Chain drive is Diamond 1 1/4" pitch, 12 strands on 61 3/8" centers.



New Pump Division Manager for Fairbanks-Morse

R. H. MORSE, Jr., Vice President and General Sales Manager of Fairbanks, Morse & Co., has announced the appointment of John S. King, as manager of the company's Pump Division.



John S. King

Mr. King has had long experience with the company starting as a student in the Beloit plant where he assembled and tested pumping equipment and Diesel engines. In 1921 he was transferred to the Indianapolis Works of the company, building electric motors and generators. A year later he joined the sales force of the Chicago Branch, working as territorial representative on pumping equipment until, in 1930, he was made manager of the Pump Department of that branch. In 1937 he was appointed manager of the firm's New Orleans Branch which position he held until his recent appointment a few weeks ago.

M. E. Montrose Elected President of Marion Steam Shovel

M. E. MONTROSE, formerly Director, Vice-President, and Manager of Sales and Services of Lane-Wells Company, has been elected President, General Manager, and a Director of the Marion Steam Shovel Company of Marion, Ohio, at the annual meeting of the board of directors. The company is one of the largest manufacturers of power shovels and mining equipment in the world and makes shovels with capacities for 1/2 cubic yard to 35 cubic yards. For the past ten years, Montrose has been with Lane-Wells Company until his resignation in February. Previously, for 13 years, he was with General Electric Company in various capacities.

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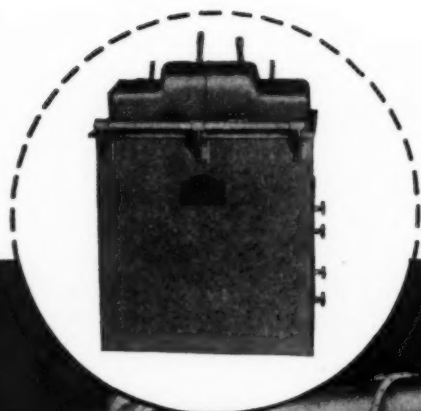
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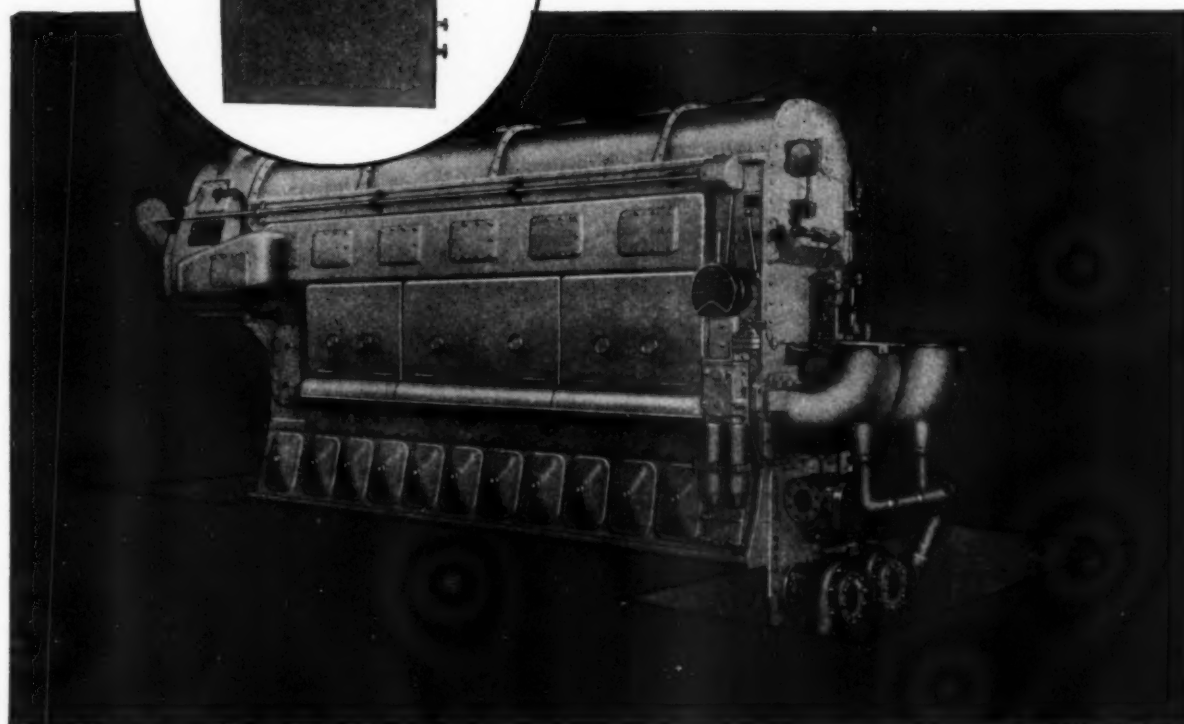
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GRESS



A "4000-HORSE" TEAM

Maneuvered by a finger-tip
through **W·A·B** Controls



These Fairbanks-Morse diesels power many of the Navy's DE ships that did so much to sweep U-boats from the seas.

Controlling the four engines—a pair to each of two propeller shafts—posed a real problem. Mechanical linkage would have required such a maze of cables, rods, bell-cranks, levers and gears that a Westinghouse Air Brake engineer was called in to see if "enginairing" could simplify the job . . . and here is the result.

Complete control of each pair of engines was centered in a small, compact control stand. Movement of a few small handles governed the entire cycle of operations. Either or both engines can be started, stopped and reversed by movement of a small maneuvering lever. The speed of either or both engines in the same bank can be accurately established merely by positioning the speed control handle. When the engines are operated together, vernier control permits the loads to be accurately balanced at every speed.

The hydraulic clutches are filled or dumped by the simple movement of

small levers. A propeller shaft brake is automatically applied whenever the maneuvering lever is in any but the "Run" position, and interlocks automatically dump the clutches if the lubricating oil pressure in the reduction gears drops below a safe point. A shift from pneumatic to manual control can be made in a moment.

W-A-B Controls present both current and post-war opportunities. If you have a control problem, it will pay to investigate the simplicity and flexibility of W-A-B Pneumatic Control Systems. For details, send for our bulletin.

WESTINGHOUSE AIR BRAKE COMPANY MARINE DIVISION



WABCO PACKING



COMPRESSORS



REMOTE CONTROLS

General Offices:
WILMERDING, PA.



Madison-Kipp Workers Refuse Union Recognition

ON May 9, 1945 an election for union representation was held at the plant of the Madison-Kipp Corporation. 711 employees were eligible to vote and of these 655 voted. The petition for union representation was defeated 506 to 149.

The ballot submitted gave a simple yes or no alternative and read as follows: "Do you wish to be represented for purposes of collective

bargaining by the International Association of Machinists, AF of L?" The election was held at the request of the International Association of Machinists, AF of L, and was under the auspices of the National Labor Relations Board.

Briggs Clarifier Appoints Charles W. Miller, Jr.

THE Briggs Clarifier Company has announced the appointment of Charles W. Miller, Jr., who has been actively associated with the aviation industry for more than 20 years, as a mem-

ber of the engineering staff. Mr. Miller is compiling special market data on oil and engine maintenance in the commercial aviation field, and is responsible for compiling test data on airlines equipment. Before joining the Briggs organization, Mr. Miller served as President of Aircraft Enterprises, Inc., of Bridgeport, Connecticut. Previous to that, he was Manager of the Procurement Expediting Division of the Bristol Aircraft Corporation, a prime contractor for Navy Amphibious Gliders.

Ess Company Announces Exhaust Hazegage

DIESEL engine exhaust has long been recognized as a primary index of combustion efficiency. However until the Hazegage was developed by The Ess Instrument Company, the evaluation of exhaust haze involved considerable equipment and a time lag which prevented the instantaneous and constant monitoring of fuel-air ratio in order to maintain the quality of haze indicative of optimum engine efficiency. Another factor of major import and not generally known or recognized by operators and owners of Diesels is that smoky exhaust indicates danger from sludge forming in the lubricating oil.

Diesels equipped with Hazegages can be operated at optimum efficiency and without the danger of sludge forming in the lubricating oil.



Ess Diesel Exhaust Hazegage

A Hazegage consists of three parts: a light unit, a photoelectric unit and an indicator which has a scale (zero to 100, left and right) and two different colored lamps (red and green). In operation the light unit, equipped with a standard electric bulb, shoots a path of light through the exhaust haze; the photoelectric unit measures the density of the haze in the path of And now please turn to page 98



The large factor of safety and high heat transfer rate characteristic of small, compact, light weight "BCF" Coolers places them in a class by themselves. The most tangible evidence of this is their use by over 81% of the Diesel Engine builders.

For a small unit fulfilling almost any heat exchange requirements—

★ Thoroughly tested in the laboratory and field ★ Easily inspected, cleaned and maintained ★ Capable of accommodating practically every piping layout

... consult a Ross heat exchange engineer about Type "BCF".

Details of design and construction graphically presented in BULLETIN 4922, sent free on request.



ROSS HEATER & MFG. CO., Inc.

Division of American Radiator & Standard Sanitary Corporation

1425 WEST AVENUE

BUFFALO 13, N. Y.

★ ***It's New***

★ ***It's Original***

★ ***It's for Small Diesel Engines***

DEMCO "IPFN" Pump

Fuel Control

After careful study of the available pump designs on the market, Demco decided to employ a fuel quantity control at the entrance of the fuel chamber. The advantage of this type of control lies in the practically effortless operation of the control needle, thereby eliminating the necessity of an expensive governor. This type of fuel control is very sensitive, hence close speed regulation can be maintained with minimum expense.

"Retraction" Type Valve

The delivery valve assembly represents a radically new design. It is of the "retraction" type. It has only parallel and flat operating surfaces. This valve has proven insensitive to dirt and, therefore, guarantees long service.

Cam Contours

Demco "IPFN" Pump will operate satisfactorily with a variety of cam contours, with flat or roller type cam followers. Depending on the type of engine, the service, and the operating speed—the proper cam contour is selected for the best rate of discharge of fuel.

Literature is now available on this new, revolutionary fuel pump—write for your copy.



DEMCO

DIESEL ENGINEERING & MANUFACTURING CORP.
200-214 NORTH LAFLIN STREET • CHICAGO, ILLINOIS

Pacific Representative: PACIFIC DIESEL & ENGINEERING, 29 Pine Street, San Francisco, California

. . . . Continued from page 96
light and shows it on the scale of the indicator. Whenever combustion varies so that the haze is either too thick or too thin, the lamps will light; green for too thin a haze and red for too thick a haze. The pointer on the scale, being set to zero to show optimum haze, will move to the left for too thin or to the right for too thick a haze. As the fuel-air ratio is corrected the lamps will go out and the pointer will go back to zero on the scale—indicating optimum engine efficiency.

If desired, sound alarms can be supplied with each Hazegage or if records are required, recorder equipped Hazegages are available to keep a 24 hour record of the performance of one or a battery of Diesels. Hazegages are easy to hook-up. The only required attachment is a sampling tube connected to the exhaust outlet.

"The Story of the Diesel"

A LARGE postwar demand for Diesel engines is building up, because of two conditions: First,

engines are wearing out at a faster-than-normal rate in mills, factories, power plants, ships and mines, due to overtime work necessitated by the war effort. Second, since practically all Diesel engine builders have been 100% in war work since the war started, they have not been in position to meet civilian demands.

These and many other facts about the industry are pointed out in "The Story of the Diesel," a booklet just published by the Diesel Engine Manufacturers Association. In concise, non-technical, easy to read style it discusses the Diesel's postwar future, its present fields of application, and advantages over other types of power. The beginning and development of the industry are also covered.

A chart depicts graphically the industry's enormous growth in horsepower-output from 1937 to 1944. A section describing opportunities for young men in the Diesel engine industry will be of special interest to returning war veterans, many of whom have had first-hand experience with Diesels in the armed forces. For a copy of this interesting booklet, "The Story of the Diesel," write DIESEL PROGRESS.

Logan Kennedy Named Perfect Circle Fleet Engineer

ACCORDING to an announcement made recently by J. C. Hamilton, Sales Manager of the Replacement Division of The Perfect Circle Company, Logan Kennedy has been named Fleet Engineer. Prior to this assignment, Mr. Kennedy who was formerly associated with the Engineering Division, has been a member of the Perfect Circle organization for six years.



Logan Kennedy

Mr. Kennedy is well qualified for his new position as Fleet Engineer, having for several years contacted large bus and truck fleets on their piston ring problems in all parts of the country.

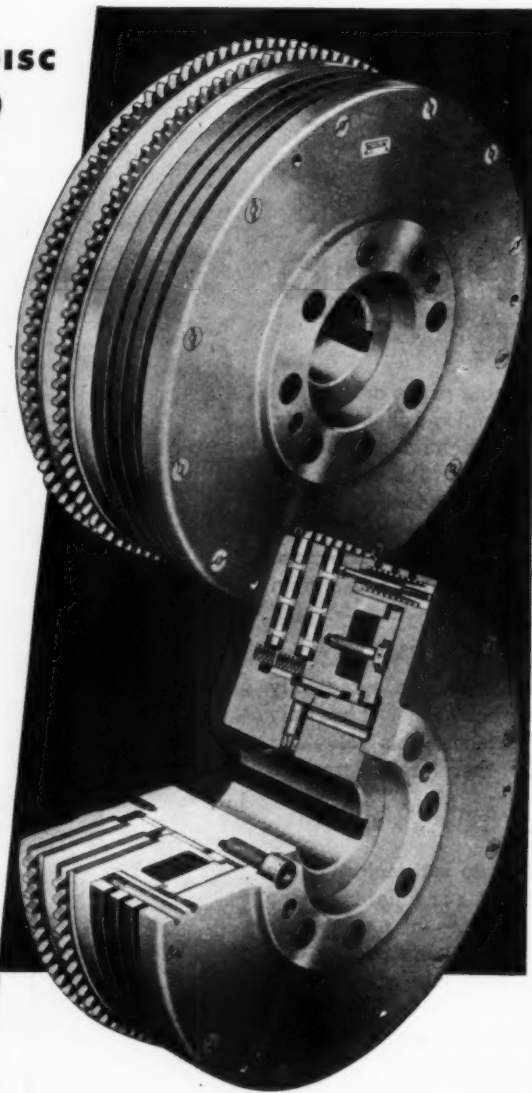
Advantages of TWIN DISC

MODEL P

Air-actuated Clutch

- 1 Remote control operation without any complicated linkage system.
- 2 Requires less shaft space . . . thus closer shaft bearing center distances are permitted.
- 3 No adjustment required . . . constant torque capacity available at all times.
- 4 Positive clutch release not affected by centrifugal force.
- 5 No clutch operating mechanism to wear.
- 6 Provides better balance . . . design is symmetrical . . . there are no irregular projecting parts.

There are many other important features of the Model P about which you will want to know. Send for Bulletin 139 which gives complete engineering details. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).



PLANE MAKERS

know their stuff

Here's one industry where only the best equipment and machine tools are used, yet still

That is why you'll find the DoAll Contour Machine right up in front—in test rooms, machine shops, on production lines.

Fastest method today for machining metals, al-

loys, laminates, plastics, plywoods—the DoAll cuts through blocks, bars, tubing, sheeted sheets—straight line or contour shaping—external and internal work.

Plane makers know their stuff—take a tip from them. Investigate the DoAll right now.



Contour Sawing



Band Files



Super Surface Grinders



Grinding Wheels



Colloidal Cutting Oils



Dust Collectors and Coolant Systems



Variable Speed Pulleys



Band Saws



Band Files



Inspection Laboratory GAGE BLOCKS



DoALL

INDUSTRY'S NEW SET OF TOOLS

CONTINENTAL MACHINES, INC.

1381 S. Washington Avenue • Minneapolis 4, Minn.

Pacific Diesel & Engineering

A NEW firm serving the Diesel and marine fields on the Pacific Coast has been established in San Francisco under the name of Pacific Diesel & Engineering. The two men heading up this organization, Wm. I. Ballentine, Jr. and F. W. Abraham, bring with them an excellent background of internal combustion engine and marine experience. Both men were formerly with Enterprise Engine and Foundry Company and have just recently returned from the Sterling Engine Company of Buffalo, N. Y., where

Mr. Ballentine was in charge of Diesel engine design and development, and Mr. Abraham was in charge of experimental work on Diesel engines.

One of the services which Pacific Diesel & Engineering offers to the industry is consulting engineering on problems of internal combustion engine design, installation, operation and maintenance in the marine, railroad, and stationary fields. In addition to being consulting engineers, Pacific Diesel & Engineering are Pa-

cific Coast representatives and field engineers for several eastern concerns.

One of these companies, now represented for the first time in this area, is the National Jet Company of Cumberland, Maryland. This organization specializes in the manufacture of microscopic precision pivot drills, gun type reamers, punches, and extremely accurate and sensitive drilling machines. In addition, they are equipped to render service in the drilling of small and accurate holes in parts such as Diesel engine fuel spray tips and precision instrument and machine parts, the salvaging of Diesel engine spray tips, the fabrication of small and minute precision instrument and machinery parts of intricate design and high precision, and the designing and fabricating of small precision tools such as counterbore and radius tools, special step reamers, plug gauges, and combined drill and radius tools.

Another company, far from unknown on the Coast, but also represented for the first time by Pacific Diesel & Engineering is the Diesel Engineering and Manufacturing Corporation of Chicago. This concern manufactures a complete line of Diesel engine fuel injection equipment including pumps, nozzles, and nozzle holders, both of a design interchangeable with other standard makes and of special designs for specific applications.

Panish Controls of Bridgeport, Connecticut is also represented. Panish Controls manufactures a complete line of marine remote controls for throttles and reverse gears on both gasoline and Diesel installations.

Porter Publishes New Diesel-Electric Locomotive Catalog

H. K. PORTER Company, Inc. has just issued a new 44-page catalog on Diesel-electric locomotives. In addition to giving complete specifications on both narrow and standard gauge locomotives ranging from 30 to 100 tons, the catalog reveals pertinent engineering and construction data. Diesel-electric advantages and necessary information for selecting the proper type of locomotive are also considered. A copy of this catalog, No. L-45-A, may be obtained by writing to H. K. Porter Company, Inc., Pittsburgh 22, Pa.

Diesel Performance

can be measured in 1/10,000 of an inch!

Efficient combustion of Diesel engines depends largely on size, length, straightness and position of the holes in their spray tips. These holes are measured in .0001 inch. Therefore, tools of almost infinitesimal accuracy are needed to assure optimum performance of injection nozzles and, consequently, of the engine as a whole.

★We have built our business and our reputation on the ability to manufacture drills, which will do the job—drills held to tolerances of plus or minus .00005 inch! For the range from .005 to .021 inches—common for Diesel-engine injection nozzles—we can supply sets of 160 drills in steps of .0001 inch, together with corresponding sets of reamers and super-sensitive drilling machines. However, if it should be more convenient for you to have the job done by us we will drill holes precisely to your specifications.

Our service to Diesel manufacturers goes ever farther: on a "Satisfaction Guaranteed" basis we are ready to clear blocked nozzles, unless they are plugged with wire or unduly enlarged through use. Many Diesel manufacturers take advantage continually of this service, it enables them to make substantial savings by avoiding the costs of new nozzles.

Write us for more information.

- Tell us YOUR requirements and we will gladly quote prices.
- Send us YOUR spray tip specifications and we will submit accurate reproductions.
- Let us know YOUR problem and we will do our best to help you.

★"You are geniuses in infinitesimal accuracy and nothing is of such tremendous importance in diesel engineering."

From a letter by Mr. Hans Bohuslav, Sterling Engine Company's Vice-President in charge of engineering.

"The Only Business Of This Kind In The World"



National Jet Company

115 MILTON PLACE

CUMBERLAND

MARYLAND



DETERGENT TYPE OILS THAT WILL NOT CORRODE BEARINGS



Some H. D. oils
have this effect on
bearings... VITAL
Oil does not!

Perhaps you have hesitated to use a detergent-type Diesel oil because you believed it would attack bearings more rapidly than would an untreated oil. That may have been true of some of the earlier forms of detergent treatment. To give the oil a cleansing and scouring action which would remove

deposits of combustion, certain additives had been employed which later were found to accelerate bearing corrosion.

But not in the VITAL treatment! Here is an oil which possesses full detergency properties, yet is so treated that bearing corrosion is eliminated.

The formation of organic acids in the oil is inhibited. A protective film is formed over the alloy bearing surface, through which such acids cannot penetrate. This film darkens the surface, prevents etching, pitting or scoring.

So use VITAL Diesel Oils in full confidence that bearings will last longer, plus the other Big Three reasons set forth at the left. When you see all these advantages—plus economy—you'll be firmly sold on VITAL, the latest in scientific treatment of Diesel lubricants. For folder and prices, write

E. F. HOUGHTON & CO.

303 W. Lehigh Ave., Philadelphia 33, Pa.

Offices in All Principal Cities

VITAL'S BIG 3

DETERGENCY

Scouring ability, removing gums and sludges from operating surfaces, keeping the engine clean.

DISPERSANCY

Holding in suspension contaminants resulting from combustion; keeping them in finely divided particles which will not redeposit.

STABILITY

VITAL Diesel Oils are highly resistant to oxidation—the best base stocks reinforced by scientific treatment for longer useful life.

VITAL Diesel Oils meet U. S. A. Spec. 2-104B for Heavy-Duty Oils.

Houghton's **VITAL DIESEL** *Oils*

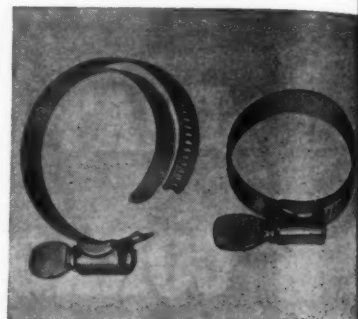
New Pump Book to Aid Engineers and Servicemen

IN an effort to assist engineers and servicemen concerned with the operation, purchase or sale of pumps in the marine, manufacturing, petroleum and process industries, the Geo. D. Roper Corporation, Rockford, Illinois, have published a new book entitled "How To Solve Pumping Problems." The book is designed to aid the beginner as well as the experienced pump engineer. It outlines, step by step, the basic fundamentals used in estimating the requirements of

the average pumping job. By simple language and the example method, it explains the formula used in figuring suction lift and discharge head. It gives information on how to estimate horsepower requirements, and the size and speed of pulleys. Technical charts and tables show friction loss in pipes, viscosity, viscosity conversion, wiring data and fuse sizes. Helpful hints for installing pumps and tips on troubleshooting are also included. The new Roper book, which is devoid of advertising, can be obtained free without obligation from Roper

sales and service branches located in principal cities—or by writing the Geo. D. Roper Corporation, Rockford, Illinois on your company letterhead.

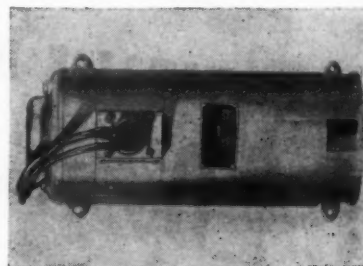
New Adjustable Worm Drive Hose Clamp



New type Wittels hose clamp.

AN improved worm drive (Wittek T WWD) hose clamp incorporates a new exclusive feature . . . an inner band of stainless steel which (1) protects the hose from the serrations in the outer band, and (2) distributes the pressure uniformly to provide greater strength and superior sealing characteristics. Made of stainless steel and designed to take full advantage of superior physical properties of that material, the hose clamp has compact streamlined housing and hardened one-piece thumbscrew. Available in eight adjustable sizes to cover the entire range of applications.

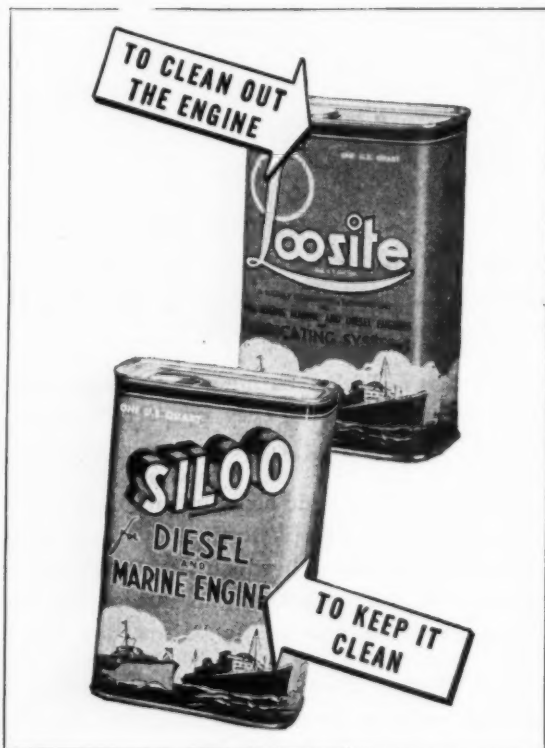
New Splash Proof Inverter



Compact, splash-proof inverter.

THE splash proof inverter has just been announced by Electrical Engineering and Manufacturing Corp. Particularly suited to marine conditions, this compact unit will convert 32 volt D.C. current into 110 volt 60 cycle A.C. current. It is furnished now to the U. S. Government, the totally enclosed, fan-cooled model is of 250 volt amperes capacity, continuous duty type, with 900 volt amperes peak capacity. It can be adapted for use with a power supply source of 110 volt D.C. and would be particularly useful on boats having D.C. power supply requiring a small amount of alternating current for the operation of standard commercial electrical appliances without necessitating the purchase of special equipment.

CLEAN ENGINES LAST LONGER



Smooth running, long lasting power requires a clean engine—an engine free of sludge, gum and acid which accumulate in the lubricating system and cause it to become sluggish and unresponsive. These petroleum residues are a major factor in destroying engines.

LOOSITE and SILOO, swift-working solvents of petroleum residues act quickly and safely to eliminate sludge, gum and acid. LOOSITE cleans out the engine—then SILOO added to

fresh crankcase oil keeps it clean. A simple, harmless, economical method of obtaining maximum performance and longer life.

Nowadays when time is precious, and every lost day serious, preservation of irreplaceable engines is vital. Get the full story and use LOOSITE and SILOO. You will be repaid with better running and longer lasting engines.

If you heat with oil—write for information on SILOO FUEL OIL TANK SOLVENT.

PETROLEUM SOLVENTS CORP. • 331 Madison Avenue, New York 17

THE REPLACEABLE NOZZLE TIP FOR HIGH SPEED DIESELS



No adjustment
necessary because
it is factory
calibrated and
sealed.

All parts of nozzle
valve protected from
combustion chamber
heat and carbon
between injections.

Backed by 25
years of
precision
manufacturing.

There are no long
lapped fits.



For Engines From 5 to 300 h.p.

The EX-CELL-O Fuel Injection Nozzle is an outwardly opening pintle type, hydraulically operated by fuel from the injection pump. It is designed for installation in High Speed Diesels and is a replaceable unit assembly containing all the working parts. ☆ ☆ ☆

Write today for Bulletins describing EX-CELL-O Fuel Injection Equipment

Fuel Injection Division
EX-CELL-O CORPORATION ☆ ☆ DETROIT 6, MICHIGAN

EX-CELL-O

EX-CELL-O for PRECISION

Gray President Names Key Men in Sales Department

JOHN W. MULFORD, president of Gray Marine Motor Company has announced appointments identifying the postwar structure of the Gray Sales Department. These include: John G. Wilson, Domestic Sales Manager, in charge of distributor accounts and dealer sales; Carl H. Gehrke, Commercial Sales Manager, in charge of stockboat accounts, boat builder business and contact with naval architects; R. H. Mitten, Advertising, Public Relations and Sales

Promotion Manager; Richard G. Hanna, Export Manager; and Edward C. Parker, Service Manager. Mr. Mulford will coordinate and direct the sales efforts of the company.

During the war the company has concentrated on certain models selected by the U. S. Army and U. S. Navy. In the postwar period the Gray Marine Motor Company will continue to supply the same diversification of models as it did before the war, with an even more extensive range of sizes based on Gray's experience in

specializing on separate types of engines for the various classes of service, high speed and slow speed. These will include both gasoline and Diesel engines.

G-E Diesel-Electric Locomotive Features in Reopening of Manila Railway

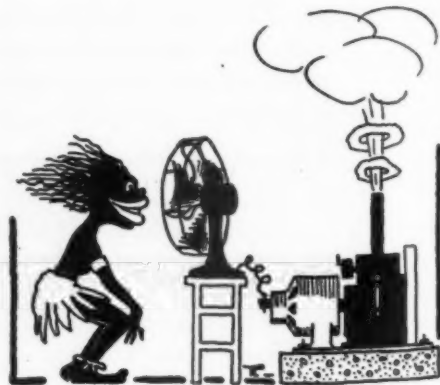
A 47-TON 380-hp. Diesel-electric locomotive, built by the General Electric Company, recently led a triumphal procession which marked the reopening of train service to the capital of the Philippines. Decorated as the "General MacArthur Special," this 47-tonner started from Caloocan station, and traversed part of the route from San Fabian to Manila over which daily freight movements have since been resumed.



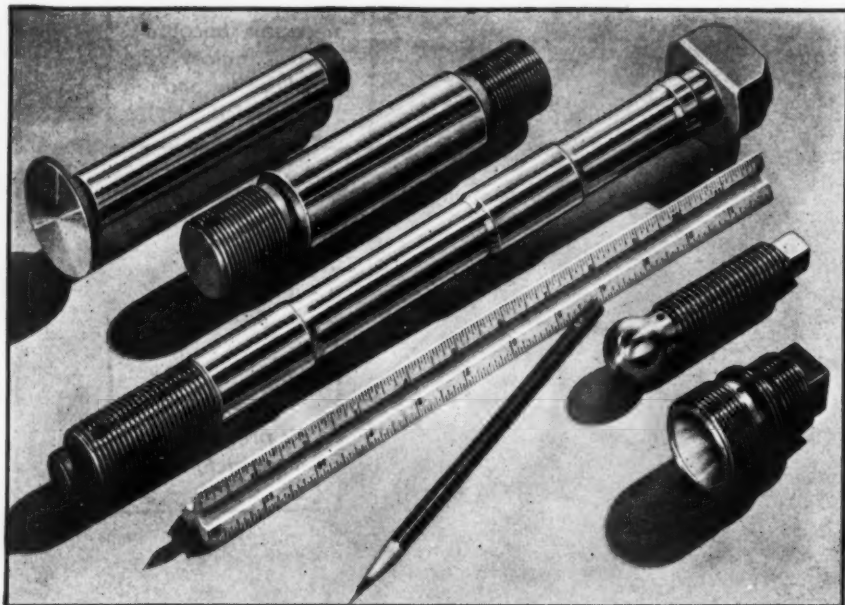
This G-E-built General MacArthur locomotive is powered with two Caterpillar Diesels.

Known as No. USA 8584, this Diesel-electric is one of many locomotives of its type built for the armed services at General Electric's Erie, Pa., works. Part of an order scheduled for the Chilean State Railways, it is one of two which were diverted by the War Production Board and consigned to the Army.

The two locomotives were shipped from Erie Works to the west coast in November 1944 and thence by transport to the Philippines. Originally designed for meter-gage track, it was necessary to make adjustments that would permit their operation on 42-inch-gage track in the Philippines.



BIG STUFF



Long years of experience have enabled The Chicago Screw Company to turn out millions of precision made screw machine products regardless of size, shape or form.

Illustrated above are a few of the larger hardened and ground screw machine products which we manufacture to exacting specifications. While we handle all types of screw machine and cold upset parts from the simplest to the most complicated, it is on the really *tough* jobs that we can demonstrate the full value of our experience, engineering ability and most modern production facilities . . . Remember "Chicago Screw" when you need close tolerance, precision made screw machine products.



THE CHICAGO SCREW CO.

ESTABLISHED 1872

1026 SO. HOMAN AVENUE CHICAGO 24, ILL.



C.W.C.'s modern foundry practice and their development of electric furnace alloyed metals provide physical properties to the casting that are otherwise unattainable.

If you wish to eliminate restrictions upon design, consider casting your product. Discover now the many advantages of advanced casting techniques . . . and let C.W.C. show you the way!

CAMPBELL, WYANT & CANNON FOUNDRY CO.
MUSKEGON, MICHIGAN



**CAMPBELL,
WYANT
& CANNON
FOUNDRIES**

• MUSKEGON, MICHIGAN
Henry Street Plant
Sanford Street Plant
C. W. C. Crankshaft Corp.
• SOUTH HAVEN, MICHIGAN
National Motor Castings Co.



• LANSING, MICHIGAN
Centrifugal Pumping Co.
• BETTENDORF, IOWA
Ordnance Steel Foundry Co.

PRODUCTS OF C.W.C. METALLURGICAL ENGINEERING: Cylinder Blocks • Cylinder Heads • "Centrifuse" Brake Drums • "Preferall" Cast Crankshafts and Camshafts • Acid Proof Cylinder Inserts • Centrifugally Cast Cylinder Liners and Sleeves

In addition to the above products, C.W.C. has facilities for producing Electric Furnace Alloyed Steel

Caterpillar Announces New Bulletin

PLANNING IN THE WOODS WITH "CATERPILLAR" is the title of a new 16-page booklet published by Caterpillar Tractor Co. Replete with photographs, this booklet pictorially compares previous logging methods with those of today before swinging into graphic word-and-picture stories of modernized road and trail building, log skidding, arch logging, winch and trailer hauling, and odd jobs around woods and mill. Several pages are devoted to

mill operations, and falling and bucking of timber, where "Caterpillar" Diesel engines furnish the power. To receive a free copy of this booklet, address Caterpillar Tractor Co., Peoria 8, Illinois, requesting Form 8872.

Postwar Jobs

POSTWAR employment prospects in 11 occupations are described in 11 different six-page Occupational Abstracts just revised and published by Occupational Index, Inc., New York University, New York 3, N. Y., at 25c each.

Included among these abstracts is one on Diesel engines.

Each abstract summarizes available information on the nature of the work, abilities and training required, earnings, number and distribution of workers, advantages, disadvantages, and postwar prospects. Sources of further information and best references for additional reading are included.

Mack Appoints Walker Chief Sales Engineer

APPOINTMENT of John Walker as manager of the Sales Engineering Dept. of Mack-International Motor Truck Corp. has been announced by C. T. Ruhf, president of Mack Trucks, Inc. Mr. Walker, who has had wide experience in applying special engineering principles to unusual transportation problems, will make his headquarters in Mack's executive offices.



John Walker

Walker joined Mack in 1918 as a member of the engineering department and two years later transferred to the Special Equipment Dept. In 1922 he was placed in charge of the department and in 1942 was named assistant to the chief engineer, which position he held until his present appointment. Mr. Walker attended Pratt Institute and other technical schools.

1944 DIESEL PROGRESS Editorial Index

A COMPLETE index of all editorial material which appeared in the 1944 issues of DIESEL PROGRESS is now available. Included is a cross index of authors and articles. Feature articles are covered by title; news notes are indexed by names of manufacturers. No charge for this index. Address requests to DIESEL PROGRESS, 2 West 45th Street, New York 19.

**ENGINEERED
AND BUILT
for Big Jobs**

Fulton Diesels are the products of engineering skill accumulated over a period of 93 years of successful heavy machinery design — our shops are amply equipped to finish the heaviest of parts to close limits. Every detail of material and workmanship that enters into the Fulton Diesel is aimed at long life and outstanding economy in operation and maintenance—sound engines through and through — that is why

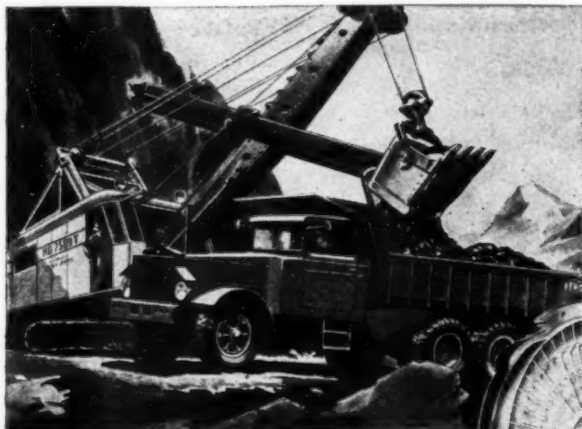
Fulton Diesels are specified for long range power projects.

1852 Successful Engine
Builders For 93 Years 1945

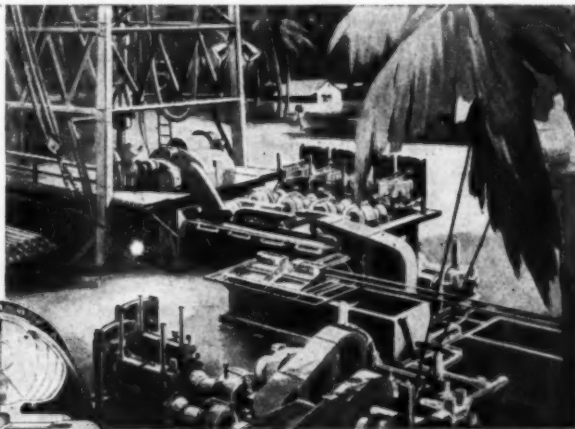


FULTON IRON WORKS CO.
• ST. LOUIS • MISSOURI •

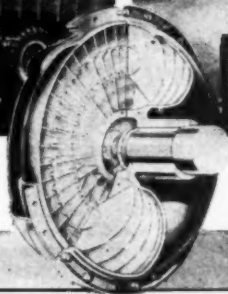
What NEXT For Gyrol Fluid Drive?



In power shovels, in trucks—Gyrol Fluid Drives have a background of years of successful operation, protecting Diesels from shock and overload.



In the oil fields—Gyrol Fluid Drives permit handling of difficult drilling operations without damage to Diesel engines or drilling equipment.



On the high seas—Gyrol Fluid Drive has spurred development of geared Diesel propulsion . . . made it practical to use lightweight high speed engines with reduction gears.



What next for Gyrol Fluid Drives? Frankly, we do not know! We will gladly cooperate with you in the application of Gyrol Fluid Drives for your plant, process or product.

THE TREND IS DEFINITELY TOWARD GYROL FLUID DRIVE

Fluid Drives are already in use on agitators, automobiles, fans, blowers, pumps, forging presses, hammer mills, paper machines, conveyors, locomotives, trucks, ships, planes, and scores of other applications.

Where smooth transmission of power and stepless variable speed control are desired, we urge you to investigate the advantages of Gyrol Fluid Drive.

Available in 3 types and a wide range of sizes—designed, developed, pioneered and built in America by the American Blower Corporation. Write us now!

OVER 7½ MILLION HORSEPOWER OF AMERICAN BLOWER FLUID DRIVE IN OPERATION.



American Blower

AMERICAN BLOWER CORPORATION, DETROIT, MICH.
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONT.

Division of AMERICAN RADIATOR & Standard Sanitary Corporation

New Opposed Piston Diesel Bulletin

FAIRBANKS, Morse & Co. has announced a new Bulletin No. 3800D describing its Opposed Piston Diesel for post-war use. Having built more than 3½ million horsepower of these engines for fighting craft and various marine use, also for railroad application, the new bulletin expresses the forward view of the company on future uses of the engine in peacetime marine, stationary and railroad services. The engine is described and illustrated in every detail, mak-

ing free use of colors to trace the oil, water, air and exhaust systems. Bulletin No. 3800D is available upon request. Write on your letterhead to Fairbanks, Morse & Co., 600 South Michigan Ave., Chicago 5, Illinois.

Cassidy Named Coast Head Advertising Agency Group

Sponsors Education Program For Returning Service Men

H. E. CASSIDY, Los Angeles advertising executive, has been elected board chairman of the

Pacific Council of the American Association of Advertising Agencies. The Pacific Council membership includes all 4-A members in the cities of Seattle, Portland, Spokane, Salt Lake, San Francisco, Los Angeles and San Diego.

Cassidy, vice-president of The McCarty Company has been active in Pacific Coast advertising agency operations for the past 17 years. He favors the immediate extension to other Coast cities of the recently inaugurated advertising technical training program which in Los Angeles has been successfully sponsored by the local 4-A chapter and the University of California.

Such a move, says Cassidy, will guide the development of future advertising personnel and the carefully planned 18 weeks course will afford returning service men an opportunity to familiarize themselves with the basic principles of advertising procedure and production that they may be better qualified to accept the advantages of an advertising career.

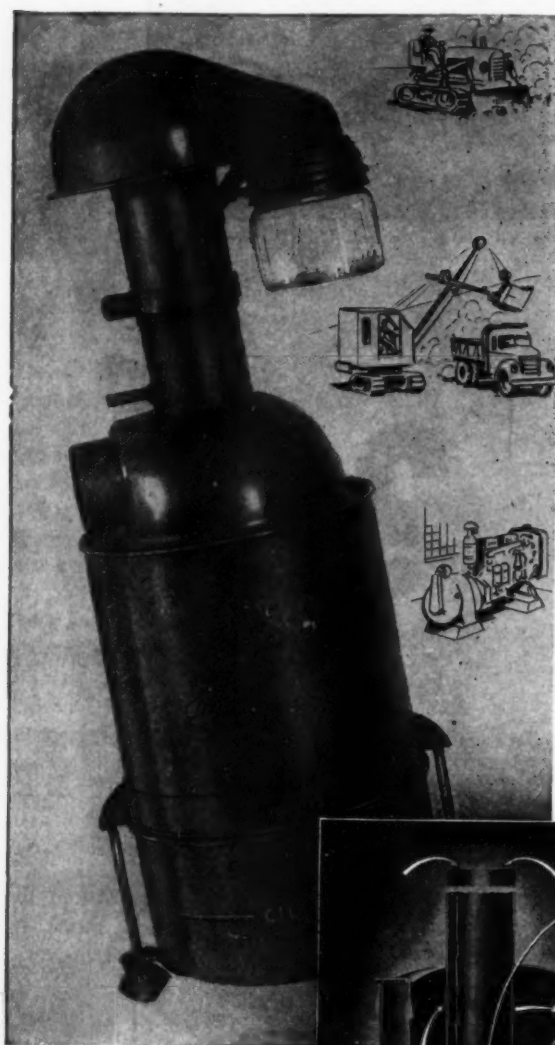
Organizers of Navy Industrial Association Guests of Navy

A GROUP of industrialists who were among the organizers of the Navy Industrial Association returned recently from maneuvers aboard the USS *Pittsburgh* as guests of the Secretary of the Navy, the Commander-in-Chief, U. S. Fleet, and the Chief of Naval Operations.

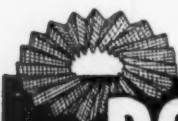


Industrialists who organized the Navy Industrial Association accompanied USS "Pittsburgh" on initial cruise enroute to active duty. Left to right: Sidney J. Clark, Assistant Manager, Otis Elevator Co., Dwight R. G. Palmer, President, General Cable Co., C. C. Felton, Vice President, Revere Copper and Brass Inc., Captain E. Gingrich, Lt. Commander, Eugene Casey, Addison F. Vars, President, Sterling Engine Company, M. H. Eisenhart, President, Bausch and Lomb Optical Company, Mark L. Sperry, Vice President, Scoville Manufacturing Company.

In commenting on the trip Addison F. Vars paid special tribute to Captain E. Gingrich, Commanding, his officers and men, "To have . . . And now please turn to page 114 . . .



World's First
Manufacturer
of Air Cleaners



DONALDSON CO. INC.

This DOUBLE SCRUBBING AIR CLEANER

WILL NOT CLOG

It scrubs itself as it
scrubs the air . . .

Completely Self-washing

There is no filter pack in the Donaldson Oil-Washed Air Cleaner to be rinsed or replaced. The heavy gauge wire screen element is permanent. Each of its precisely formed components is forced into place under pressure and locked into one rigid unit. It cannot flex under vibration to cause breakdown. The element functions as an oil condenser only. Servicing is confined to cleaning the oil cup and replacing with fresh oil.

The Donaldson cleaner combines large dirt capacity with the compactness necessary for mobile units. This dependable cleaner with its streamlined collector pre-cleaner is being fitted to more and more diesel power units . . . serving purposes of war and peace.

Whatever your air cleaning problem, let the Donaldson engineering staff solve it for you. Write—

DONALDSON COMPANY, INC.
666 Pelham Blvd., St. Paul 4, Minn.
Chicago Office:
600 South Michigan Avenue, Chicago, Ill.



Submerged air inlet insures impingement of dust particles and constant, high cleaning efficiency.

Double scrubbing action. Turbulent oil-scrubbing cleans the element as it cleans the air.

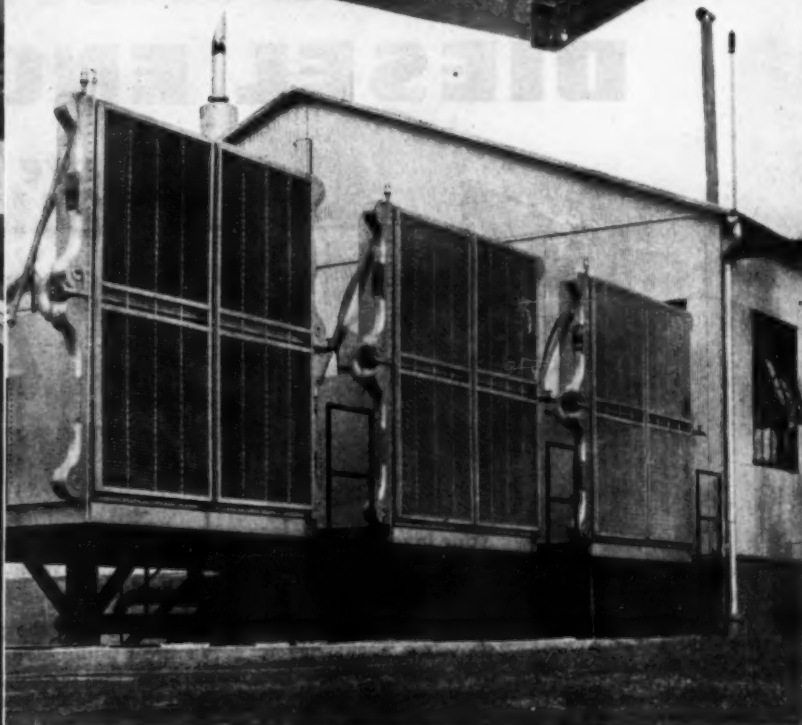
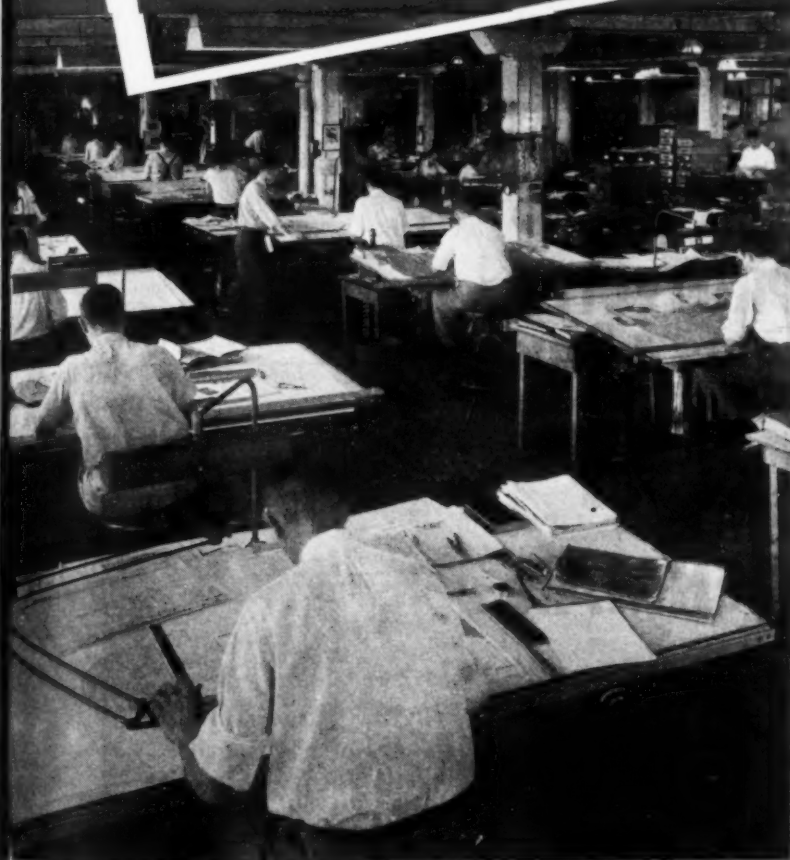
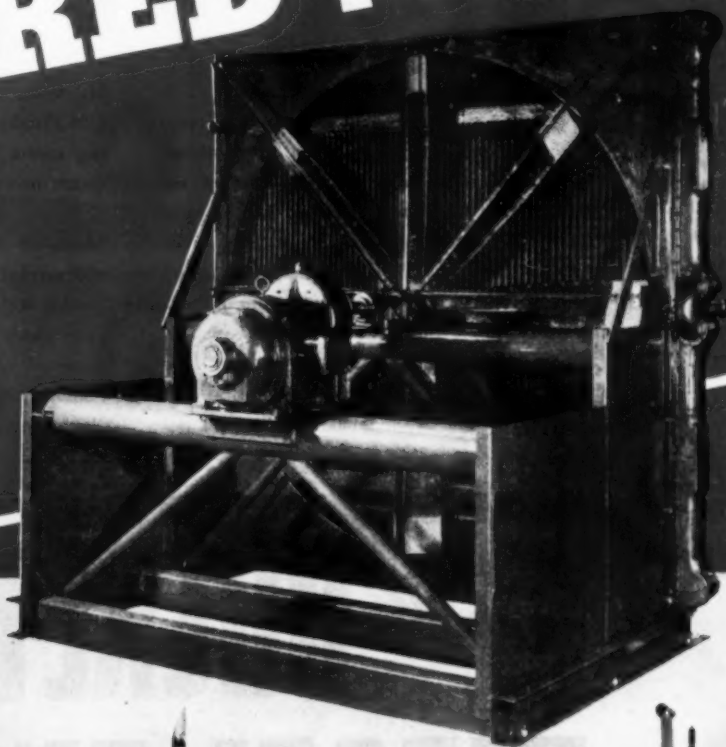
Lead coated screen element functions as condenser . . . not filter. No restriction build-up because of dirt plugged filter pack.

Quiet-zone dirt separation. Impinged dust is carried down out of element into quiet zone of oil cup where it settles out. Cleanest oil is used in scrubbing.

Air Cleaners
and Crankcase
Ventilation
Systems

ENGINEERED . . .

FROM START TO FINISH



Each Young heat transfer product is created with a mission in mind. From the time it first stirs into expectant life under the skilled hands of Young engineers to the time that it is delivered to the job, a Young product is dedicated solely to the task of meeting your individual requirements. Many a difficult problem involving the cooling of gas, gasoline or Diesel engines condensing steam or cooling reprocessed gas has been permanently solved by the use of a Young Engine Jacket Water Cooler as pictured above. From start to finish, each Young heat transfer product is engineered for specific use. Take advantage of long years of experience in the heat transfer field by consulting Young with your next cooling problem. There is no obligation.

YOUNG

HEAT TRANSFER PRODUCTS

OIL COOLERS • GAS, GASOLINE, DIESEL ENGINE COOLING RADIA-
TORS • INTERCOOLERS • HEAT EXCHANGERS • ENGINE JACKET
WATER COOLERS • UNIT HEATERS • CONVECTORS • CONDENSERS
EVAPORATORS • AIR CONDITIONING UNITS • HEATING COILS
COOLING COILS • And a Complete Line of Aircraft Heat Transfer Equipment.

YOUNG RADIATOR COMPANY • Dept. 255-F • RACINE, WISCONSIN, U. S. A.

DISTRIBUTORS: The Happy Company, Denver 778, Tulsa 1, Oklahoma • A. E. Harnsey Company, 689 S. Grand Avenue, Los Angeles 14, California • Wrightson-Compton, New York, N. Y. • C. M. Bull, San Francisco, California • W. F. Martin Co., Chicago, Ill. • Calmes Engineering Co., New Orleans, Louisiana • EXPORT: American, Inc., New York, N. Y.

. . . . Continued from page 112
 been civilian shipmates with such a grand crew of fighting men," he said, "was not only a stimulating and signal honor to every one of us, but one long to be remembered. We learned to love the ship and our Navy more dearly than ever, as day by day, we participated in its maneuvers. Nothing was withheld from us from the heads of the different departments such as gunnery and engineering, right through the ship including navigation and communications. "Our best thoughts and good wishes," continued

Mr. Vars, "travel with every man aboard as the USS *Pittsburgh* goes forward on its history making career to parts where important engagements now are taking place."

Much of the success of the trip was due to the careful planning of our daily routine by Public Relations Officer Lt. Commander Eugene Casey who saw to it that practically every piece of equipment, from stem to stern, was demonstrated and explained, Mr. Vars said. By taps every one in the party knew that he had

had a real day's workout that only could be allayed by the excellent food served to us and all hands, he continued.

The idea of the Navy Industrial Association was implanted in the minds of industrialists when they attended the first two Orientation Courses conducted by the Navy at Columbia University. It was given encouragement by the Secretary of the Navy, the late Frank Knox, and further was accelerated by his successor, James Forrestal. Now the membership is numbered in the hundreds, representing the top segment of American industry, all pledged to closest possible teamwork in war production with and for the Navy. It is a non-profit, non-political organization, scientific and educational in character, with sights raised high for technical developments that will help to insure the strongest peace-time Navy in the world.

Navy Type Hilco Hyflow Oil Filters

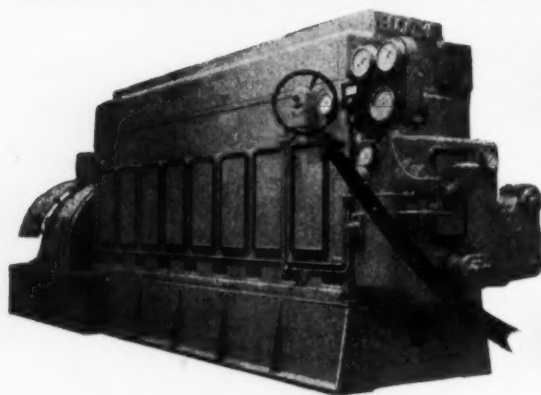
THE Hilliard Corporation of Elmira, New York is announcing their complete line of Hilco Hyflow Oil Filters, Navy Standard Large, as approved for installation on Diesel or gasoline engines in accordance with U. S. Navy Bureau of Ships, Machinery Standards, Plan 204-Alt. 1.



All Hilco Hyflow Oil Filters, Navy Standard Large, receive the Navy Standard Large Filter Element, measuring 7-5/16 in. x 18 in. The filter casings are made to receive 1, 2, 3, 4, 6 and 8 filter elements. The filter casings are available designed for bypass or shunt filtering as may be required by the engine builder or Navy specifications. Inquiries are invited from engine builders or contractors and those interested in the application of Navy Standard Large Lubricating Oil Filters, and filter elements.



DIESEL ENGINES



are **PROTECTED**
24 Hours a Day
by this
ALERT
 (SILENT)
WATCHMAN

Your investment in a Buckeye Diesel is protected every operating minute by the patented "Silent Watchman", an important feature exclusive with Buckeye.

If either oil or water supply drops below the predetermined pressure necessary to serve the engine, the Silent Watchman cuts off the fuel supply at the nozzles, immediately stopping the engine—preventing possible costly repairs.

The Silent Watchman goes into action **INSTANTLY** if—

1. Lubricating oil pressure is too low.
2. Quantity of lubricating oil in the system is insufficient.
3. Lubricating oil is too thin.
4. Water in cooling system is insufficient.
5. Water circulation stops.
6. Bearings are too loose.

Stationary and Marine
 Propulsion (Direct
 Reversing) Engines
 150-1350 H.P.

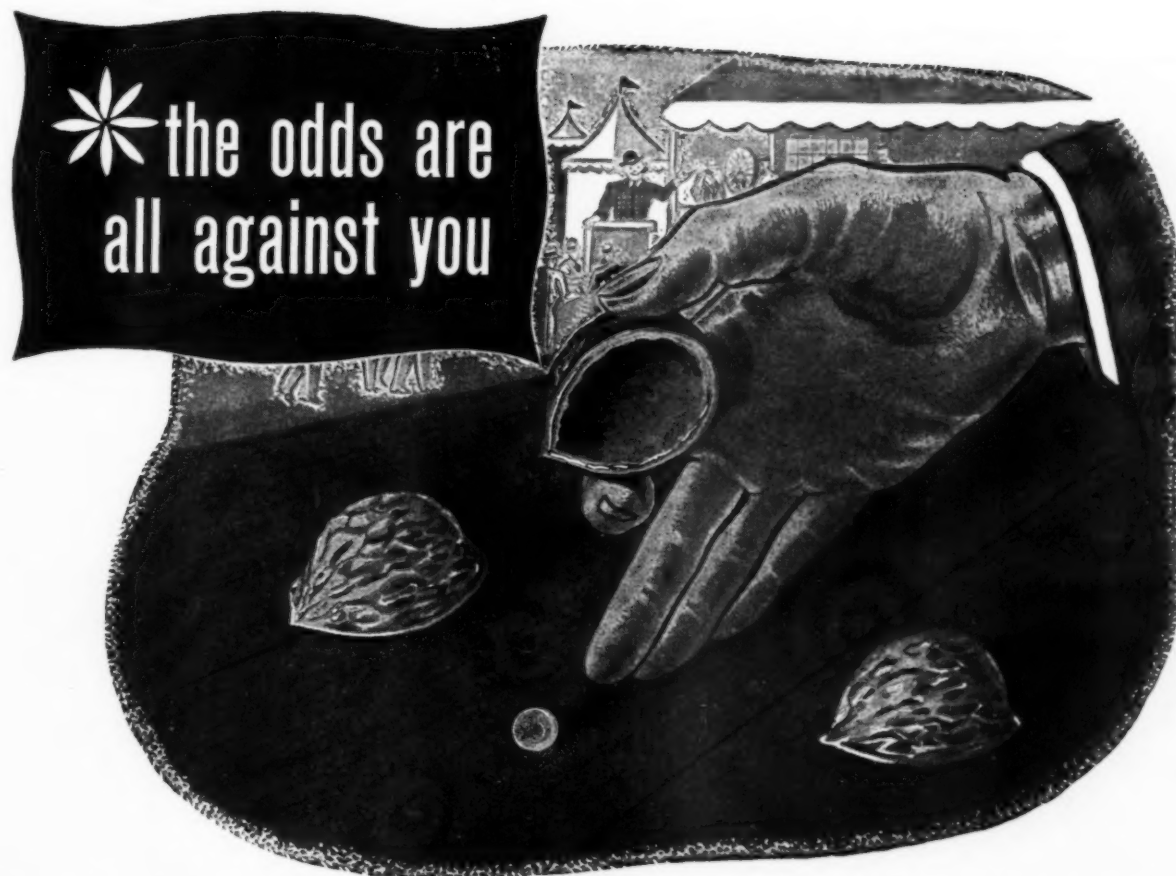
There are eleven other outstanding Buckeye features that mean much to users of Diesel power.

Write today for bulletins.

Stationary and
 Marine Auxiliary
 Generator Sets
 100-900 KW

THE BUCKEYE MACHINE CO. — LIMA, OHIO

• ENGINE BUILDERS SINCE 1908 •



*Gambling is fun when the odds are somewhere near even — but like trying to beat the old shell game — taking a chance on dust getting into your power equipment always ends in disaster.

When you protect engines and compressors with AAF air cleaners you prevent the unnecessary costly, time-consuming breakdowns which always result from excessive wear caused by abrasive dust and grit that gets into their vitals.

Throughout the nation, Cycoil cleaners are prolonging the useful life of valuable power equipment — permitting uninterrupted operation on stepped-up running time and accelerated production schedules.

The cost of Cycoil's "preventive maintenance" is insignificant compared to savings in wear, running time and man-hours. Write for free literature.

Cycoil Oil Bath Air Cleaner provides 4 way cleaning — Impingement, Scrubbing, Cyclonic Action and Filtering.

Filtration thru Double Cells completes cleaning action eliminating oil mist from air.

Cyclonic action induced by vanes throws oil containing dust outward.

Scrubbing action thoroughly mixes air and oil, entraining all dust particles.

Impingement of dirty air against oil, deposits the heavier dust particles immediately. Oil and air mixture then passes upward with whirling motion thru vanes to succeeding cleaning steps. Cycoil bulletin No. 138 D gives complete information.



A complete line of Engine and Compressor filters have been developed by AAF engineers thru years of experience with every kind of air cleaning problem. Bulletins descriptive of each type from unit to large automatic, self-cleaning filters for multiple unit service are available without obligation.

AMERICAN AIR FILTER COMPANY INC.

INCORPORATED

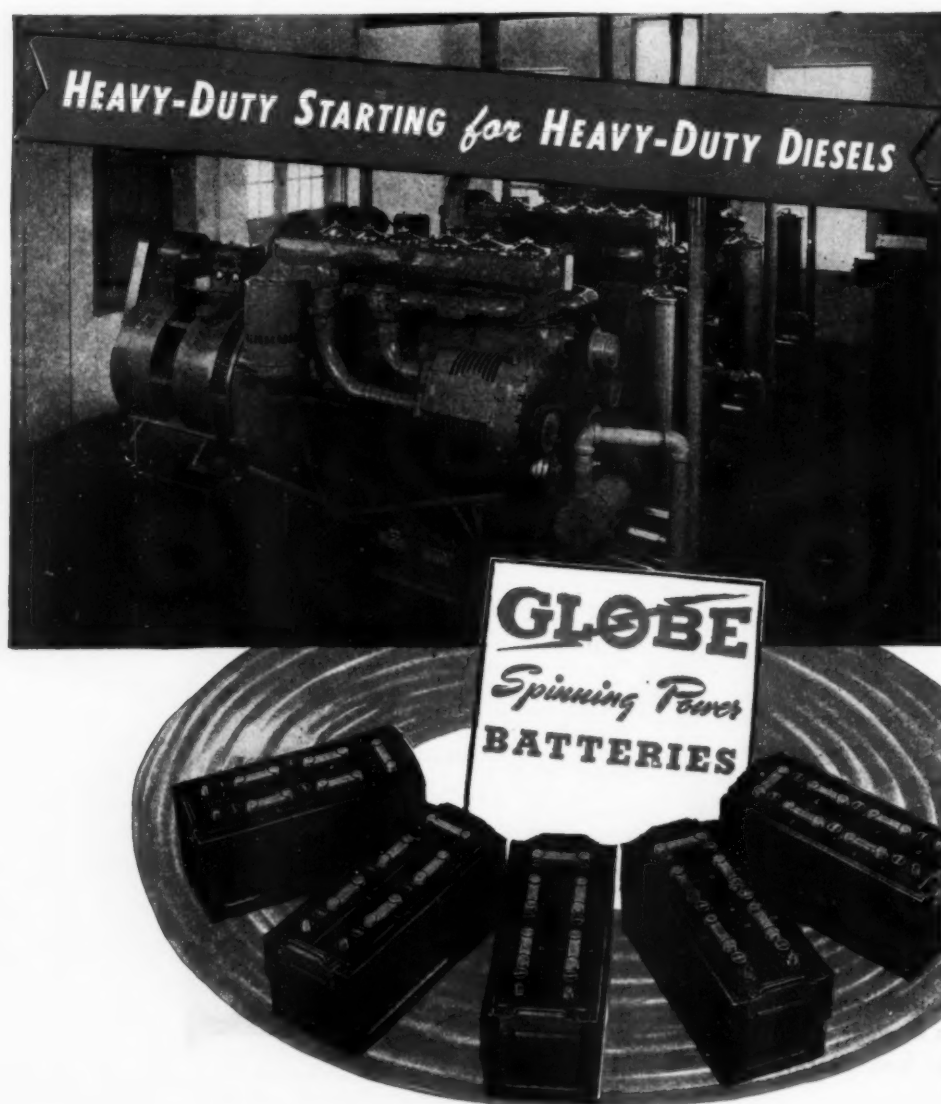
408 Central Avenue, Louisville 8, Ky.—In Canada, Darling Bros., Ltd., Montreal, P. Q.

E. Digges La Touche Joins Briggs Clarifier

BRIGGS Clarifier Company recently announced the appointment of E. Digges La Touche to administer the Field Service Engineering Staff of the Aviation Division.

The Briggs Company, which is now supplying oil maintenance equipment to the Army, Navy, Coast Guard and Maritime Commission as well as high priority war industries, is also producing

the vitally important Mobile Oil Clarifier for the Army and Navy air forces. Mr. Digges La Touche is responsible for the development of foreign markets for Briggs Aircraft Ground Clarifiers. Previous to the appointment by Briggs, Mr. La Touche was executive assistant to the director general of the British Air Commission, which is charged with procurement, expediting and distribution of aircraft for Great Britain, having gone to that position from the staff of a New York investment firm.



BATTERY starting for Diesels is as fundamentally easy and simple as battery starting for your car. Because of Globe Perma-Set Plates, resulting in long, trouble-free, dependable service, an increasing percentage of electric starting Diesels are equipped with Globe Spinning Power Batteries. Call in a Globe representative. No obligation. Address nearest factory.

GLOBE-UNION INC., Milwaukee 1, Wisconsin

ATLANTA • BOSTON • CINCINNATI • DALLAS • KANSAS CITY • LOS ANGELES
MEMPHIS • MINNEAPOLIS • PHILADELPHIA • SEATTLE



DP-645

Prize Winner Lists Glycerine Uses In Diesel Maintenance

HOBERT D. YOUNG, Diesel engineer in the Engine Laboratory of the Sinclair Refining Company, of East Chicago, is the first prize winner in the competition instituted by the Glycerine Producers' Association for the best list of uses of glycerine, actual or recommended, not covered in the association's booklet "Nothing Takes the Place of Glycerin—1583 Ways to Use It." He receives a \$100 war bond. Four second prizes, each consisting of a \$25 war bond, have been awarded to C. R. Arnold, Chemical Engineer, of New Richmond, Wisconsin, H. F. Goodenough, of the Refinery Supply Company, of Tulsa, Oklahoma, Miss Elizabeth E. Mumm, War Department Chemist, residing in Chicago, and Clement D. Vellaire, of the Upjohn Company, Kalamazoo, Michigan.



Hobart D. Young

Mr. Young listed glycerine uses as a penetrating oil for Diesel engine injectors, as a lacquer and gum solvent on pistons of gasoline and Diesel engines, as a coolant for high temperature internal combustion engine operation, and for other industrial purposes.



Get to know this button.

Cracks In Heads or Pistons Bothering You?

Here's how to repair them quickly, easily, inexpensively

... By using the HARMAN "Save-a-Weld" Process

<p>FIG. 1</p>	<p>FIG. 2</p>	<p>FIG. 3</p>	<p>FIG. 4</p>
<p>These are the Harman "Save-a-Weld" Materials. Chain-Locks and Seal-Packs are all you have to buy to make "Save-a-Weld" Repairs.</p>	<p>Locate extent of crack and mark the ends. If crack goes over shoulder, continue repair on other plane.</p>	<p>Divide length of crack by length of Chain-Lock and mark off lock locations across the crack.</p>	<p>Trace one side of Chain-Lock and move the lock one position to locate centers for drilling design.</p>
<p>FIG. 5</p>	<p>FIG. 6</p>	<p>FIG. 7</p>	<p>FIG. 8</p>
<p>Drill design at the end of crack to receive first of series of locks.</p>	<p>Complete drilling details in "Save-a-Weld" Instruction Book. Any mechanic with ordinary tools can make these repairs.</p>	<p>Insert and upset locks one at a time until design is filled. Follow simple instructions to make perfect repairs.</p>	<p>Having locked one end of crack, find centers at the other end of crack, drill design and fill with locks.</p>
<p>FIG. 9</p>	<p>FIG. 10</p>	<p>FIG. 11</p>	<p>FIG. 12</p>
<p>Repeat process at each design location (see Fig. 3). This will keep crack from extending and will return up to 85% of the strength of casting.</p>	<p>Then seal the crack by drilling holes, one at a time along crack between lock groups until entire length of crack has been drilled and filled.</p>	<p>Detail of installation of overlapping and interlocking Seal-Packs being upset in position in holes between lock groups.</p>	<p>Enlarged top view of part of restored head with crack completely repaired. Head is thus quickly and inexpensively gotten back to work.</p>

For complete detailed information on just how to make "Save-a-Weld" repairs with your own crews right on the job, write for free Harman Instruction Book. Any good mechanic, by following these simple, complete instructions can make patented "Save-a-Weld" Process repairs on fractured iron castings, saving you time and money. "Save-a-Weld" is the original locking process, perfected through the years for better and easier application.

HARMAN PROCESS CO.
401 Montana St. EL PASO, TEXAS



Cooper-Bessemer Adds Second Star to Army-Navy "E" Pennant

FURTHER recognition for outstanding production of Diesel engines recently came to The Cooper-Bessemer Corporation in the announcement that its Grove City, Pa. plant has been awarded a second renewal on its Army-Navy "E" originally presented April 8th last year. The announcement came from Admiral C. C. Block, U. S. Navy, chairman of the Navy Board of Production Awards. In addition to the Army-

Navy "E" pennant with two stars, the company flies a five-starred Maritime "M."

Caterpillar Issues New Logging Booklet

IN THE WESTERN WOODS is the title of a newly published eight-page color booklet which tells, in words and with dramatic photographs, how "Caterpillar" Diesel tractor power solves the problems of the Western logger. Among the illustrations are pictures showing many logging operations, conducted under vari-

ous types of conditions, as the demand for greater woods production by log-hungry mills is met. For a free copy of this interesting booklet, request Form 8928 from Caterpillar Tractor Co., Peoria 8, Illinois.

George Stout Named to A.N.A. Committee on Advertising



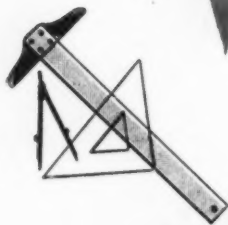
George W. Stout

GEORGE W. STOUT, Perfect Circle Advertising and Publicity Manager, has been named as a member of the Industrial Advertising Committee of the Association of National Advertisers. A.N.A.'s Industrial Advertising Committee is comprised of 35 of the nation's top advertising, sales and promotion men. The first meeting of this committee was held in New York at A.N.A. headquarters on April 19.

Fourth Army-Navy "E" to Rockford Clutch Division

THE Rockford Clutch Division of Borg-Warner has been awarded the Army-Navy "E" for the fourth time, Division President Arch A. Warner was recently notified by Under Secretary of War Robert P. Patterson. For a period of more than two years the organization was the sole supplier of clutches for medium tanks for the U. S. Army.

BEFORE FOUNDATION DRAWINGS ARE MADE, CONSIDER . . . KORFUND VIBRATION CONTROL



A Diesel engine can be isolated *after* it has been installed — after vibration becomes apparent. But it is more economical and far less troublesome to include vibration control equipment in the original foundation drawings.

When vibration control is considered in the beginning, the concrete foundation can be designed to accommodate the ideal type of isolator. No compromises

are necessary, expensive inertia blocks do not have to be remade, and satisfactory isolation of vibration can be predicted in advance.

Korfund engineers have been designing foundations for more than forty years. The results: Over a quarter of a million successful installations!

Don't wait for vibration to become a problem. Call in a Korfund engineer *before* you make your foundation drawings.

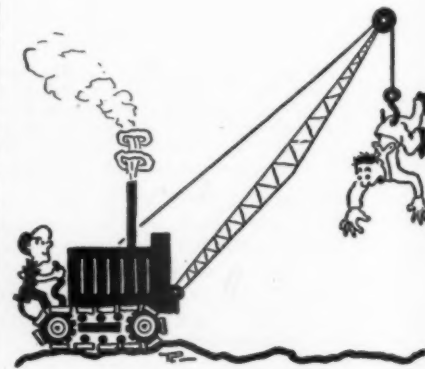
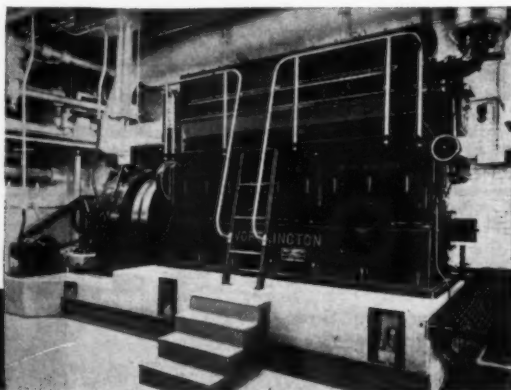
Write for complete details of Korfund Vibration Control.

THE KORFUND COMPANY, INC.

48-28 Thirty-second Place Long Island City 1, N. Y.
Representatives in Principal Cities



Korfund engineers were consulted before the drawings were made for this Diesel engine foundation. Note the vibration isolators in the pockets in the concrete.



Here a new science attacks an old problem



Cylinders in engines usually get a pretty raw deal. They have to take more grueling punishment than any other part of the engine. They... and the rings... bear the brunt of the blame when engines lose power.

Here, in the Van der Horst Research and Engine Testing Laboratories, we are continuously attacking this old problem of wear. The new science of PORUS-KROME processing is attuned to the needs of the various types of engines. Tests are run in several types of engines to determine the degree and type of porosity which will give the maximum wear resistance. Every development or change in PORUS-KROME processing is forthwith scrutinized

by the "Lord High Inspector" . . . the engine.

Let's work out *together* a square deal for your cylinders. Our engineers will gladly develop with your engineers the specifications which will multiply cylinder life 4 to 20 times . . . ring life 3 to 5 times. The entire facilities of these laboratories are committed to solving the problem of cylinder wear for engine manufacturers.

Even though building of engines for general use is still restricted, it is none too soon to plan for the use of PORUS-KROME in postwar engines. A request from you will bring complete information about PORUS-KROME. *Van der Horst Corporation of America, Olean, New York, Cleveland 11, Ohio.*

PORUS - KROME . . . *Good for the Life of your Engines*





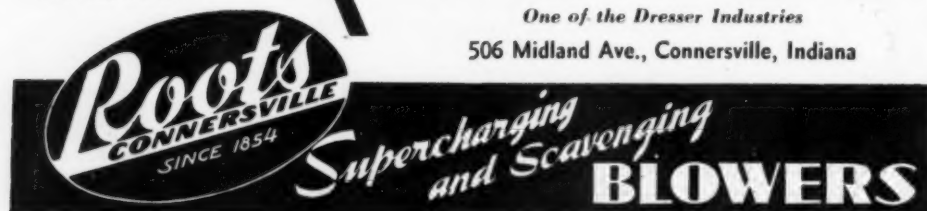
ABOVE INSTALLATION
Capacity 16,000 CFM
900 RPM, 239 BHP.

The definite economies and power increases brought about by the addition of Roots-Connorsville Positive Displacement Blowers for supercharging and scavenging Diesels is an established fact. The resulting superior performance casts a shadow of obsolescence over those Diesels not so equipped. As the originators of the Roots-type blower, our many years of sound experience have developed and perfected it to its present high degree of efficiency and dependability. It will pay you to consult with us regarding your supercharging and scavenging problems.

ROOTS-CONNERSVILLE BLOWER CORP.

One of the Dresser Industries

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HALL WET DIESEL VALVE REFACER

Model 80-A

Special type COLLET holds valve stem securely without brinelling or marking stem.

WET GRINDING prevents surface burning and stem growth; produces finer finish.

Handles valves to 5" head dia.

QUICK-ACTING CHUCK LOCK for quick, easy insertion or removal of valve.

FULL BALL BEARING SPINDLE insures smoother operation.

GRINDING WHEEL MOTOR

MICROMETER WORKHEAD FEED CONTROL Operator knows exact amount of metal being removed.

DUPLICATES ORIGINAL FACTORY PRECISION AND FINISH

MASTER MOTOR SWITCH and CUTOFF SWITCH

RHEOSTAT CONTROL adapts Workhead speed to valve dia.

TRANSVERSE or CROSS-FEED LEVER.

DOVETAIL TYPE WAYS accurately machined. Spring-loaded bronze gibs compensate for wear.

WORKHEAD MOTOR

Write the factory or consult your HALL Jobber for complete information on the 80-A Refacer.

THE HALL MANUFACTURING COMPANY • TOLEDO 7, OHIO

Memphis Has Done It. Can You?

FACING the prospect of a dwindling income from cotton after the war, Memphis is planning now for high level postwar productive employment to which commerce, industry and agriculture will contribute. These plans, developed under leadership of the Memphis Chamber of Commerce and an area unit of the Committee for Economic Development, are designed to provide productive postwar jobs for returning service men and for home front workers.

Memphis proposes to reach this goal by encouraging crop rotation and by cultivation of new crops on farms which until now have produced cotton almost exclusively; by demonstrating that cotton cloth and allied products can be made more economically in Memphis than in present areas of output, thus laying the foundation for a great new textile industry in the Middle Delta country; by converting its war industries into peacetime plants, thus providing 60 per cent more factory jobs than were available in 1940; by aggressive advertising and merchandising programs to expand wholesale, retail and service trades in the 78 countries served by Memphis, thus assuring more jobs in business.

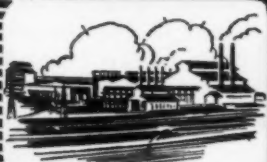
New crops must replace or supplement cotton in the Delta country. State college experiments have shown what these crops will be. Sweet potatoes are an example. This crop will yield low cost carbohydrates which the South needs badly to expand its hitherto lagging livestock and dairy industries. The sweet potatoes, dehydrated, will be the basis of a rapidly expanding livestock industry, agriculture planners believe there will be other new crops.

Memphis has just completed a thorough survey on the costs of producing cotton cloth there and elsewhere in the country. According to this survey a 40,000 bale cotton mill operating in Memphis, can ship its cloth to New Orleans, for example, at an annual saving of \$122,000, compared with the cost of shipment from the Carolinas, now a large center of production. Comparable savings would be \$147,000 to St. Louis, \$161,000 to Dallas, \$190,000 to Kansas City, etc., Memphis contends.

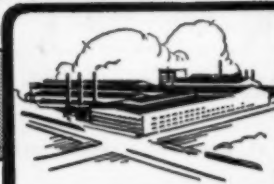
The South will not sit by idly in the future and see its cotton shipped to North Carolina to be made into cloth, to New York to be made into shirts, then to a Chicago mail order house and finally back to Memphis to be worn by the field hand who picked the cotton. Memphis plans to go all the way in making and marketing . . . And now please turn to page 124 . . .

One RESPONSIBILITY... One CONTROL

FROM raw materials to finished product . . . your specifications are carefully and accurately worked to completion . . . *one definite control* and *one responsibility* . . . these advantages are yours when you place your requirements for special forgings and steel castings with the Erie Forge Company.



ERIE FORGE COMPANY, ERIE, PA.



It all starts with Bendix



The Drive for Heavy-Duty Starting



Heavy-duty industrial machinery demands quick, dependable starting—and Bendix Heavy-Duty Starter Drives provide just that.

Specifically designed for the task at hand—engineered to operate satisfactorily even under adverse working and weather conditions—Bendix Heavy-Duty Starter Drives are performance-proven in starting all types of industrial machinery.

In the forests—on the farms—in the oil fields and in the factories—in fact, wherever heavy-duty starting demands *the best*—it's Bendix! Over sixty-five million installations of Bendix Starter Drives to date—many more *tomorrow*. Better buy Bendix!

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Bendix Drive

ECLIPSE MACHINE DIVISION

BENDIX AVIATION CORPORATION, ELMIRA, NEW YORK

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FOR SPEED
AND
ACCURACY**

Hecker has the men, equipment and ability to help solve any tooling problem regardless of its size. In the past fourteen years we have helped to tool up practically every type of American Industry. For full information regarding Hecker engineering and tool building service write for our new brochure "Men and Machines".

**A.W.
HECKER**

ENGINEERS and Tool Makers

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Memphis, continued from page 122

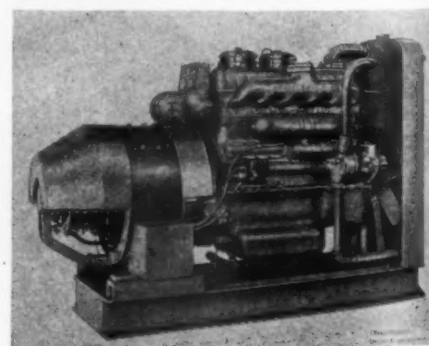
ing shirts and countless other cotton products. Sounds sensible, doesn't it?

On the basis of high incomes in industry and agriculture Memphians look forward to a much greater volume of business in the postwar whole-sale, retail and service trades. Aggressive advertising and merchandising programs are planned, also "face lifting" for business houses in need of modernization. There will be surveys of commerce and construction programs just as there have been for industry. More jobs in every line of business is the objective of these plans designed to get merchants and tradesmen to thinking now about postwar conditions. The chief concern of the Memphis merchant of today is not how many workers he will need after victory, but where he will get all the help his expanded business will require.

If thorough planning, modern methods and community enthusiasm will do the trick the Memphis of tomorrow will be bigger, more productive and more prosperous than ever before. New crops will supplement cotton. Bomber workers will make mechanical cotton pickers. Business, offering new products and services will need thousands more workers. The blue prints are ready, the factories and machines will be built or reconverted, the labor will be available.

Every community, every county, every state in these United States has got to do what Memphis has done—plan for tomorrow now.

United States Motors Issues Two New Bulletins



U. S. 30 kw. generating plant with 6-cylinder Hercules Diesel.

ONE new bulletin, just received from United States Motors, describes its one and two-cylinder Diesel-electric plants of 2 to 10 kw. capacities. These are complete, self contained units, with all necessary operating equipment attached, ready to run. Another new bulletin describes the U. S. Diesel-electric plants of 4 to 6 cylinder types with 15 to 75 kw. ratings. This line of generating units has been in quantity produc-

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tion for the armed forces and is distinguished by having the radiator cooling fan mounted directly on the crankshaft extension thus eliminating fan belt, pulleys and bearing. Copies of these new bulletins will be mailed free upon request to United States Motors Corporation, Oshkosh, Wisconsin.

Ronald B. Smith Elected Elliott Vice President

RONALD B. SMITH, recently elected vice president in charge of engineering, has been associated with Elliott Company since 1937.



Ronald B. Smith

A member of the American Society of Mechanical Engineers, Mr. Smith has served on the Society's Power Test Codes Committee, The Coordinating Committee on Gas Turbines, and the Committee on Industrial Instruments and Regulators. As a member of the Society of Automotive Engineers, he served on the Aircraft Engine Engineering Activity Committee. He is also a member of the American Society of Metals and the Franklin Institute, and of Sigma Xi and Tau Beta Pi.

As Director of Research and Development for Elliott Company, Mr. Smith was responsible for the design and construction of the first gas turbine power unit ever built in the United States for marine application. He also developed the Elliott-Buchi turbocharger now used almost exclusively on four-cycle Diesel engines manufactured in the United States.



America depends upon her inland waterways
for moving vast quantities of vital freight
...and upon American tugboat companies
to insure its low-cost, on-time delivery.

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Established 1840
TOWING & TRANSPORTATION
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Largest tug fleet in the world

DIRECT CURRENT GENERATORS

*Rating
1 KW TO
30 KW*

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Kurz and Root D.C. Generators are designed and made to meet the requirements and specifications of the user—for efficient performance, long life and minimum maintenance, whether powered by electrical, gasoline or Diesel equipment. The design most applicable to the user's particular mechanical product is important to the buyer of generators. You are assured that Kurz and Root D.C. Generators are pre-tested, mechanically and scientifically correct for the purpose intended. Complete details and engineering data upon request.

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Cleaning Air Compressor Valves

An important factor in obtaining the highest operating efficiency from your Diesel engine is the effective removal of accumulated carbon deposits from air compressor valves. Soaking in hot solution of recommended Oakite material, then rinsing and brushing, does the job . . . gives you clean, bright valves ready again to operate smoothly . . . maintain stable compression.

Write us today for details. A postcard will receive prompt attention. No obligation, of course.

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Principal Cities of the United States and Canada

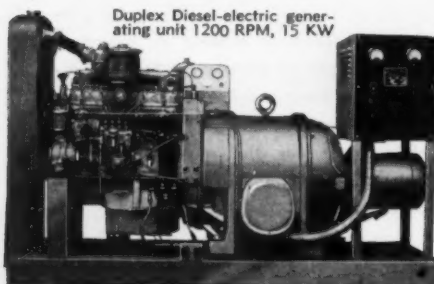
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Specialized **CLEANING**

BUY MORE BONDS

Generating Units
5 K.W. to 100 K.W. A.C. or D.C.

Close regulation of voltage and frequency is an outstanding feature of the generating units we build with either Diesel or gasoline prime movers. We are also equipped to supply any type of instrument panel required.

Manufacturers of engine generator sets for over 20 years.

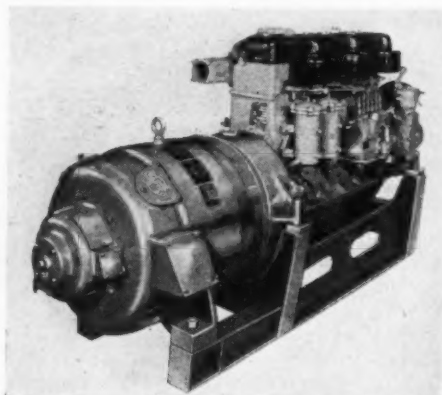


Duplex Diesel-electric generating unit 1200 RPM, 15 KW

Duplex Truck Co.
Lansing, Michigan

Bardco Announces New Diesel-electric Set

THE Model DA40-N12, Diesel-electric alternating current generating set has been announced by Bardco Manufacturing and Sales Co., Los Angeles, California. The unit not only makes an exceptionally compact and clean installation possible but simplifies maintenance operations and features lighter motor-generator elements.



Bardco AC Diesel generating set.

The generating plant consists of a Bardco 40 kw., 120-208 volt, 3 phase, 60 cycle generator, close-coupled and driven by a Superior 6-cylinder Diesel engine equipped with a heat exchanger system. This type Diesel generator set recently has been installed for marine power generation on board the purse seiner *Sea Scout*, built for operation off the coast of California. It is suitable for continuous duty operation in marine, industrial or farm applications where A-C or D-C current is required. It is available with complete controls, switchboard and voltage regulator.



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The Modern GAS TURBINE

By **R. TOM SAWYER, M.E., E.E.**,
Engineer, Diesel equipment, American Locomotive Company; Chairman, Co-ordinating Committee on Gas Turbines of A.S.M.E.

Its Uses as an Exhaust Turbo-
supercharger or Prime Mover in
All Fields of Service,
including JET PROPULSION

Just published, this new work brings together in one compact volume a great wealth of authoritative information on the gas turbine. It traces the history of this power device from its earliest inception down to its latest applications in all fields of service on land, on sea, and in the air. Briefly, here are some of the principal topics covered in the 10 chapters:

- Construction and operation of the modern gas turbine
- advantages of the gas turbine as a supercharger
- history of inventions in the field
- how turbocharging increases engine power
- efficiency of the internal combustion turbine and factors in performance; mechanical aspects
- use of gas turbines in industry, diesel electric locomotive, marine service
- use of turbosuperchargers in the aircraft engine
- operation of the jet propelled plane

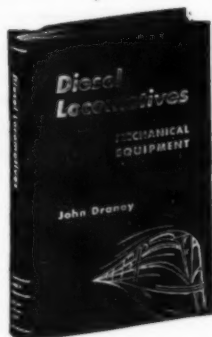
PROFUSELY ILLUSTRATED! Author has included 131 line drawings, halftones, blueprints of various types of gas turbines, charts, graphs, and tables.
216 Pages 6 x 9 Inches \$4.00

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The First Books of their Kind.

A practical guide to the operation and maintenance of

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By JOHN DRANEY.

Past President, United Association of Railroad Veterans

In collaboration with Diesel technicians from American Locomotive Co.; Baldwin Locomotive Works; Electromotive Division of General Motors Corp.; General Electric Co.; Westinghouse Electric & Mfg. Co.; and many others.

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Both \$7.50 postpaid

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Portable 15,000-Volt Test Set



New G.E. portable test set of large capacity.

A PORTABLE a-c test set, mounted on a three-wheeled truck so it can be easily moved about and plugged into any convenient 115- or 230-volt, 60-cycle outlet, and capable of supplying smooth stepless test voltages from 0 to 15,000 volts, has been announced by the General Electric Company, Schenectady, New York. Though relatively small—only 36 inches high, 49 inches long, and 30 inches wide—the set has a capacity of 5,000 volt-amperes and can be used for highly accurate testing of generators or large motors of approximately 1,500 hp., transformers up to several thousand kva., short lengths of power cable, also insulators and other pole line hardware.

Baldwin Locomotive Announces Canadian Subsidiary

FORMATION of a Canadian subsidiary of The Baldwin Locomotive Works to market in Canada such Baldwin products as turbines, water wheels, hydraulic presses, power tools and Diesel engines from headquarters to be opened soon in Toronto, is announced by Ralph Kelly, president of the parent company. The wholly-owned subsidiary, known as Baldwin Locomotive Works of Canada, Ltd., will subcontract its orders to the United Steel Company, Ltd., which has four plants in Eastern Canada and headquarters in Toronto.

Officers of the new company, elected at an organization meeting held in Toronto, are Ralph Kelly, president; W. Horace Holcomb, vice-president; W. N. Brownlie, managing director; H. D. Humphreys, secretary and treasurer; and T. E. McFalls, assistant secretary and assistant treasurer. All except Brownlie are officers of the parent company. Managing Director Brownlie, will direct the activities of the subsidiary and will establish his headquarters in Toronto.

PANISH CONTROL MEANS FOOLPROOF CONTROL



Finger Tip REMOTE CONTROL

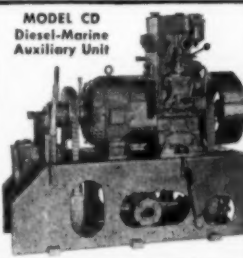
Instantaneous, foolproof, single lever operation of both reverse gear and throttle. Battle-tested and battle-proven to be the most outstanding and reliable remote control system made.

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SPACE SAVER!

**POWER
LIGHT
WATER
AIR**

**All in One
Compact
Package!**



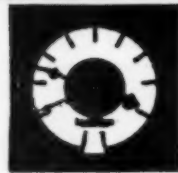
ENGINE—8 h.p.
GENERATOR—3½ or 5 kw.
AIR COMPRESSOR—11 or 20 c.f.m.
PUMP—60 or 90 g.p.m. at 60#
Net Weight—1,400 to 2,400 lbs., depending upon capacities.
Other combinations to 10 kw. and Diesel-Generator sets available.

WRITE FOR BULLETIN 151

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1708 South 48th Street MILWAUKEE, WISCONSIN U. S. A.

**CHECK
YOUR FUEL
SUPPLY
AT A
GLANCE**



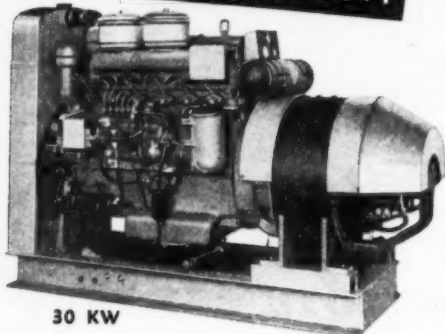
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CONTINUOUS DUTY



30 KW

Complete range of units from 2 to 75 KW for all types of service. Where production does not interfere with Army-Navy requirements, U. S. Plants are now available on AA3 priority or better. Write

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542 Nebraska Street
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ELECTRIC PLANTS

The Experience Resulting
from 83 Years Devoted
Exclusively to the Design
and Application of
Both Plain Mechanical
and Hydraulic Types of
Governors
Is Available When You
**SPECIFY
PICKERING
FOR YOUR ENGINES**

PORTLAND

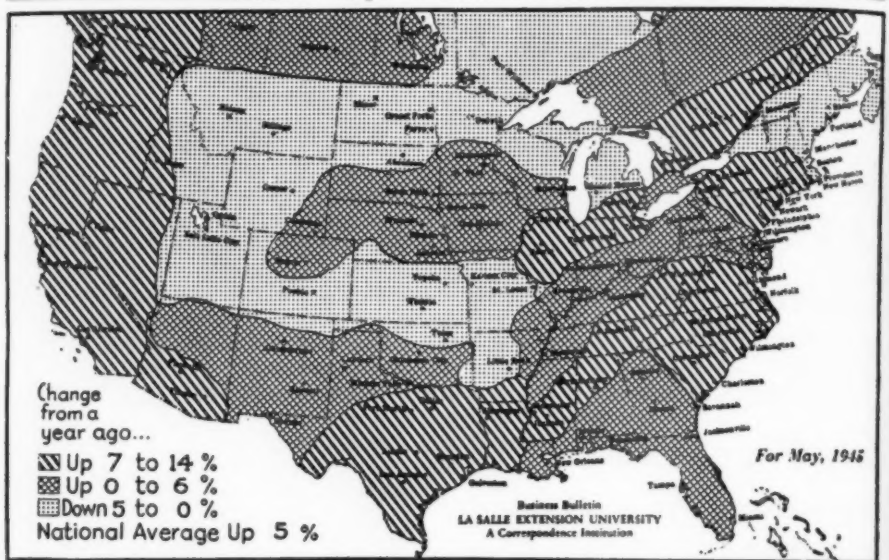


CONN.

WANTED DIESEL CONTACT MAN

Prominent Chicago manufacturer of Diesel equipment has opening for contact man who is thoroughly acquainted in marine, railroad and stationary engine fields. Must have some technical knowledge of Diesel engines. Immediate opportunity with exceptional post-war future. Give full details in first letter. Address Box 149, DIESEL PROGRESS, 2 W. 45th St., New York 19.

LaSalle Map of Business Conditions



Business Activity Is 5 Per Cent Higher Than a Year Ago

Map Supplied by BUSINESS BULLETIN DIVISION of La Salle

The rate of business activity continues to hold up well, but in many communities the volume of trade and industry is not expanding as it has been in recent years. Indications are becoming increasingly clear that the peak of wartime industrial production was passed some time ago. Trade is still good in many places, however, and but little change is expected in the general average during the next few weeks. The outlook is for fairly good stability at a high level as long as military requirements and government spending are large.

Although business in most parts of the country is better than it was a year ago, the changes vary considerably in different sections. In several places business is lower, but the general average remains 5 per cent higher than last year. The LaSalle Map shows the significant variations in the larger areas but it cannot indicate the smaller localities in the heavily shaded regions, as well as elsewhere, in which activity in some lines is slowing down. Neither does it reveal the continued curtailment of some types of civilian industries in areas where the total volume is still very high. When considering conditions in any city or in any industry, the reader should make allowance for these variations. In some cases, activity may be declining in an industry or in a community even though the general average of the entire area is rising.

Business in the Pacific Coast states, in the South, and in the Southeast has been expanding more rapidly than elsewhere. Most of this expansion has been due to the recent speeding up of several types of war production. Agricultural conditions in those sections of the country are also relatively favorable as the production of a wide variety of foods, including fruits, vegetables and livestock, has kept farm income high.

In the industrial section around the Great Lakes in the New York area business is also maintaining a substantial increase over last year. Current reports indicate that in these regions the spread between the two years narrowing a little more rapidly than in other parts of the country. The rate of industrial production and the volume of business there was very high a year ago. An example of this narrowing spread is the steel industry in which output has been somewhat lower than during most of the last twelve months.

Conditions are fairly favorable in the farming districts of the Middle West. The most serious shortages of farm labor and machinery are being partly made up and farm income is still close to the peak. Demand for farm products will continue to be large for some time after war conditions change. Business volume is somewhat better in the central region than in either the northern or the southern part. Future trends will depend much upon crop prospects which so far are unusually promising.

Regions where business is lagging behind the national average are those in which the consumer goods industries are still dislocated by the concentration of war production. The most significant of these areas is New England where business in many places is lower than it was a year ago. In the Mountain states business is also lagging.

In Canada, the volume of trade and industry has been following about the same trends as in the United States. The greatest advances have been in the industrial and agricultural regions north of the Great Lakes and in the West. In the central areas activity is a little lower, but it is holding up well.



Application for Membership in the
Diesel Engineers International Assn.
576 Newark Ave., Jersey City, N. J.

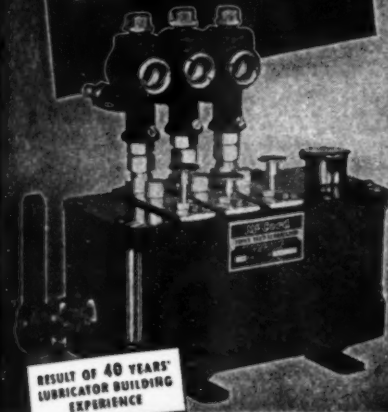
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Enclose \$10.00 Entrance Fee

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Nordberg Advances Top Executives

IN extensive personnel changes, recently announced by Nordberg Mfg. Co., E. C. Bayerlein, who had been vice-president and treasurer, was named chairman of the board. James A. Friend, former vice-president and purchasing agent, was named vice-president in charge of purchasing and secretary. Ervin H. Hoeft, former production manager and general superintendent, was elected to the post of vice-president in charge of manufacturing and Chester W. Foster was elevated from the position of controller to that of treasurer. He is succeeded in the controller's position by Harold L. Vandenberg.

Arne Johnson, formerly assistant superintendent, becomes superintendent. Percy Des Champs becomes assistant superintendent. Former sales manager Roland W. Bayerlein has been made manager of the heavy machinery division and John M. Friend goes from the post of chief material expeditor to that of production manager.

In addition to the above changes Hoeft, Roland Bayerlein and Foster have been elected to the board of directors.

Mack Appoints Harry Bernard



Harry Bernard

APPOINTMENT of Harry Bernard as Director of Service and Service Engineering has been announced by C. T. Ruhf, president of Mack Trucks, Inc. The new director will be responsible for overall policy and management control of both organizations. Mr. Bernard joined Mack in 1924 and prior to his present appointment had been general service manager. He will make his headquarters in Mack's Long Island City plant.

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West Coast Diesel News

By JIM MEDFORD

PROPELLED by a 320 hp., six cylinder Atlas Imperial Diesel, with auxiliaries of the same make turning 40 kw. Westinghouse generators, a 101-ft. tuna clipper by San Diego Marine Construction Co. (California) for unnamed owners, will have Fairbanks-Morse pumps and motors.

ANOTHER San Diego-constructed clipper has been launched by the Lynch Shipbuilding Co. The *Notre Dame* is 96 ft., is owned by John Cardosa & Co., and has a 400 hp. Enterprise Diesel, a pair of Caterpillar auxiliaries and F-M pumps.

POWERED with an 800 hp. Enterprise Diesel, Lynch Co. recently completed the 116-ft. clipper *Portuguesa* for Capt. M. J. Rosa. Auxiliaries are Caterpillar Diesels, generators by Fairbanks-Morse.

AT Newport Harbor, California, North American Co., are building a 55-ft. fish boat for Sam Meserve. The engine is a 100 hp. Caterpillar Diesel.

MAKING the sixth Murphy Diesel-engined craft in the Indian fishing fleet at Hoonah, Alaska, of the Icy Straits Salmon Co., an unnamed 57-ft. craft by Barbee Marine, Seattle, Washington, gets a 135 hp. Murphy Diesel.

BUILT for Carl Edwards by the Seth Greene Machine Works, Seattle, Washington, an all-wood 70-ft. dragger has a 175 hp. Cummins Diesel.

THE Portland Tug & Barge Co., Portland, Oregon, report the repowering of two of their towboats with Murphy Diesels: *Multnomah* with a 150 hp. and a 100 hp. in the *Dayton*.

THE new 40-ft. work and utility boat by Robt. Allen for the Burrard Dry Dock Co., Vancouver, B. C., named *Chummy* is powered with a 100 hp. Cummins Diesel giving a trial speed of 11 knots.

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AIRCRAFT & DIESEL EQUIPMENT CORP.
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THE new steel 126-ft. tuna clipper *Dominator* completed at Martinolich-Associated Repair Basin, San Diego, California, has an 800 hp. Elliott-Buchi turbocharged main Diesel; three Caterpillar auxiliary Diesels; F-M generators, pumps, motors; Alnor pyrometer.

NAMED *Mayflower*, a 143-ft. Campbell Machine-built San Diego, California, clipper has a supercharged 840 hp. Union Diesel and two Union Diesel auxiliaries, a Caterpillar Diesel-electric standby unit and G-E generators. Vessel is now being framed for early summer delivery.

OWNEED by the Van Camp Sea Food Co., and built by Birchfield, Tacoma, Washington, the new *Chicken of the Sea* is 143 feet and has an Elliott-Buchi turbocharged 1,560 hp. Enterprise main Diesel and twin 265 hp. Enterprise auxiliary Diesels; generators are Westinghouse.

THOMPSON Machine Works, San Francisco, California, reports sales of Gray Marine Diesels for repowering of tow boats: twin 165 hp. in the *V. H. Rosich*, and a 110 hp. in the *Noname*.

HER main engine a 125 hp. Caterpillar marine Diesel equipped with a Twin Disc reduction and reverse gear, the 58-ft. *Sal C* has been completed by the Nunes Bros. yard at Sausalito, California, for Angelo Costanzo; batteries are Exide.

BUILT by the Peterson Boat Building Co., Tacoma, Washington, for Benedito Campagno, Monterey, California, the 85-ft. seiner *J. B. Campagno* is powered with a 300 hp. Union Diesel.

THE Tacoma Boat Building Co., Tacoma, Washington, has laid the keel for an 80-ft. seinc boat for Barney Iversen. All equipment has not yet been decided upon but the main engine will be a 250 hp. Atlas Imperial direct-reversing Diesel.

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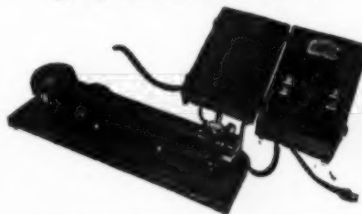
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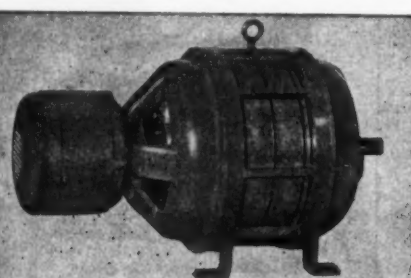
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